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I was raised on a third-generation family farm in Oxford County, which includes cash crop and cow-calf operations. I also recently completed my PhD, with a focus on Ontario agricultural history; I am passionate about the past, present and future of our industry. I remain involved in our family operation, enjoying my time in the barn, in the field, and, yes, even the farm office. Over the years, I've gotten to know a few local pork producers and I enjoyed meeting more of you at the **Ontario Pork Congress** earlier this summer.

In this month's issue, our coverage ranges from a feature series on group sow housing by writer **Jim Algie**, to a review of the markets with **Moe Agostino** and **Abhinesh Gopal** and to **Ernest Sanford's** third article in his series on reproductive failure.

We're pleased to introduce the popular *Better Farming* Up Close department to *Better Pork* to highlight Ontario pork producers. This month, we profile **Steve Scott**, an Oxford County farmer with a pork finishing operation.

We're also happy to welcome the return of **Richard Smelski**, well-known in the pork community, as our Second Look department writer.

My new role as managing editor allows me to combine my love of ag with my love of research and writing. I am eager to continue to build relationships with Ontario farmers, being a member of this community myself. Please do not hesitate to contact me at andrea.gal@farms.com with any comments or ideas. **BP**

ANDREA M. GAL

Cover Story

Photo: JIM ALGIE

Departments

Social (Ag)Media

A 2015 **Farm Credit Canada** Market Insights report indicates Canadian producers are active users of social media. **Facebook** is the most popular network (62 per cent) and 27 per cent of farmers use **Twitter**. Over 40 per cent of respondents use both networks daily.

Social media is a quick and convenient source of news. It allows producers to discuss current industry conditions. Social media also allows farmers to connect with consumers.

Given the importance of online communications to the farming community, *Better Pork* magazine introduces a regular roundup of interesting accounts and an exploration of viral ag discussions.

This month we focus on the Twitter accounts of pork industry organizations and research groups. This list does not indicate endorsement.

@OntarioPork
Ontario Pork provides updates on research and activities in support of its members.

@FarmsSwine
A member of the **Farms.com** group of companies, Farms.com Pork News tweets on industry conferences, events and news.

@cdnpork
The **Canadian Pork Council** discusses political/trade news of interest to Canadian producers.

@UGSwineResearch
The **University of Guelph** tweets about its swine-related events and research.

@NPPC
Interested in hearing about what's happening in the U.S.? One option is the **National Pork Producers Council**.

Share a Twitter account you love with us @BetterFarmingON or letters@betterfarming.com. We always appreciate your thoughts! BP

Bacon critic wanted

For bacon addicts, the perfect job may have been created south of the border.

On June 1, **Extra Crispy**, a website devoted to breakfast, posted an advertisement for a bacon critic.

"Do you like eating strips of cured pork belly, a.k.a. bacon?" began the website posting. "Do you have strong feelings about what makes good bacon and bad bacon? Is 'bad bacon' even a thing?"

The bacon critic, of course, needed more qualifications than a simple passion for this cut of pork. The successful candidate also had to be opinionated and have the ability to write for inquisitive readers.

The website gave potential applicants more than three weeks to write a short essay "recounting your favorite bacon-related memory."

The freelance gig runs for three months.

Unfortunately, Extra Crispy only allowed Americans to apply. Too bad – we are sure there are many experts on bacon right here in Ontario.

Extra Crispy is part of media company **Time Inc.** BP

New tech to ensure manure pit safety

Scientists from **Penn State's College of Agricultural Sciences** have developed a tool for use in confined-space manure storage pit design. The tool will help to ensure the safety of farmers and technicians, who periodically enter storage pits for maintenance and repair.

Users input data on storage pit dimensions and features. They can then learn the amount of time needed for proper ventilation of toxic gases, such as hydrogen sulfide and carbon dioxide.

According to **Dan Hofstetter**, a research assistant involved in the tool's development, the website is user-friendly enough that non-specialists, such as emergency workers, can turn to the tool to access safety information for rescue attempts. The university's press release, however, suggests the tool will be used primarily by planners to ensure safe designs.

The university announced the tool's creation in May, after a decade of research and work.

In Ontario, an average of 25 farm deaths occurred per year between 2000 and 2008, according to the **Agricultural Fatalities and Hospitalizations in Ontario 1990-2008 report**. A total of five fatalities in this period were directly connected to gases in manure pits. BP

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By 2024, hog producers across Canada will be required to house gestating sows in groups. The change is one of the most significant to take place in the industry within the last three decades. While the deadline is years away, planning, design and construction all take time. So how is the industry managing? *Better Pork* writer Jim Algie takes a look in this series of three articles.

Geert Geene

The LOOSE HOUSING REVOLUTION: STEPPING INTO A NEW AGE OF SOW MANAGEMENT

Group housing is the only form of managing gestating sows that Geert Geene has ever known. Yet this Huron County farmer acknowledges the system has its challenges.

by JIM ALGIE

Geert Geene was a kid when his farming family emigrated from Holland 15 years ago; but even at 10 years of age, he knew they were moving partly to avoid mounting agricultural regulations.

Geene feels a bit that way about Canada's two-year-old Code of Practice for the Care and Handling of Pigs with its push toward establishing the country-wide practice of group sow housing by 2024. Then again, Geene, with his 1,400 sow-farrowing operation in a four-year-old barn in northern Huron County, has quietly become an example for others considering just such a move. He's among eight featured producers working with the University of Saskatchewan National Sow Housing Conversion Project.

Geene farms with his father, Gys, and a brother, Peter, in an operation that includes hog finishing, broilers, corn, soybeans and wheat. Geert, who studied agriculture at the University of Guelph Ridgetown Campus, has never known any other way but group housing for gestating sows. He has no criticism, however, for farmers who advocate confinement.

"I think the farmer knows best what's best for his animals," Geene, 27, said during a barn tour one afternoon recently. He stood as he talked in the barn's lunch room, as if caught midstream on a busy day. He'd pushed his hearing protection cups back on his skull. A cell phone and hog markers tucked for easy access into the chest pockets of his overalls.

He'd been talking about how much he enjoys farm work, both livestock and crops. In both, progress is visible within days. You see your work amount to something, he said.

Some stalls remain

The Geene barn still has stalls, of course, used mainly for pregnancy checking and for animals who have experienced conflict with the group social environment. But the space

Geert Geene is among eight featured producers working with the University of Saskatchewan National Sow Housing Conversion project.

on slatted floors is organized more generally into large open areas subdivided by thigh-high, pre-cast concrete panels that create pens for static groups of 12 to 15 animals.

Competition for feed takes place along the open troughs lining one side of shared pen spaces of his barn. In the open environment, unlike stalls, docile animals can suffer.

Walkerton-based general contractor, John Ernewein Limited built the structure. Countyline Equipment Ltd. of Listowel installed an Automated Production Systems (AP) chain feeder system. Geene calculates capital cost per sow space at about $2,000. The system lacks electronic sow feeders, but they're under consideration.

The promise of electronic sow feeders

Computer-controlled feeding and recording systems for hog production promise reduced social pressure in group housing and possible new efficiencies. The machines recognize tagged individuals and distribute feed accordingly.

They allow customized feeding for individual needs and would accommodate a move Geene is also considering from relatively small, "static" groups to larger "dynamic" groups.

"Then it's just one big party in there," he said, referring to the potential for reduced social pressure in larger groups. "Maybe it's because some of those docile sows could stick together in a corner."


Group management and changes in social behaviour with an ageing sow cohort are the largest challenges Geene has faced.

Geene is also waiting on better technical evidence about the location of electronic feeders in large-group floor plans. What's attractive about them is the potential to manage individual rations "especially for gilts or bigger sows," he said.

Although he's part of a generation of farmers familiar with digital technology, Geene remains concerned about technical complexity in electronic feeders.

"I don't want to be in the barn all the time," he said. "You'd still have to train employees and I think that would be an issue."

"And then, Murphy's Law, it breaks on a Sunday or when you're out in the fields planting. My feed system broke when I was planting too, but it's just a quick little fix."

Challenges with changing social behaviour

Group management and changes in social behaviour with an ageing sow cohort are the largest challenges Geene has faced. It's part of the reason he's moving to larger batch farrowing groups — to better match sows for size and maturity.

"It's not like stalls; you put 'em in and walk away," he said. "I can't just take one and say, 'Oh, this one's getting a little skinny, I'll put her in with the skinny girls; you can't do that."

At startup with a group of first-parity sows, the animals were fairly uniform in size and age. Since then, the introduction of new animals and the retention of others have created growing herd disparity in size and ages.

"I find the older sows don't put up with as much; they're a little grumpier when somebody comes in their little area and they know the system. They know they've got to eat 'cause that's all we're getting for today, so I think they're a little more aggressive," Geene said. **BP**

September seminar addresses group housing challenges and opportunities

by JIM ALGIE

A September seminar planned for Stratford should help hog farmers sort "the challenges and opportunities" of group housing for gestating sows, Ontario Swine Specialist Laura Eastwood says.

Sessions planned for Arden Park hotel include evening speakers beginning at 4 p.m. on Sept. 6 who will address issues for those already working with sow groups as prescribed by the Code of Practice for the Care and Handling of Pigs. A full day beginning at 9 a.m. on Sept. 7 deals with questions from producers considering the move.

"We've started to hear a lot more interest … whether they should build new facilities or renovate an old facility," she said.

Featured speakers on Sept. 6 include National Sow Housing Conversion Project coordinator Dr. Jennifer Brown of the University of Saskatchewan on aggression in group housing. As well, University of Guelph graduate student Quincy Buis will discuss recent experiments with precision feeding of sows using electronic systems.

Day two features veterinarian Julie Ménard of the Quebec-based swine production, processing and marketing firm, F. Ménard Inc. discussing her company's sow barn conversions and related technology.

Producer panels are planned each day.

"Should I renovate that building or do I need to start from scratch and build something new?" Eastwood said, outlining the producers' dilemma. "Also, what do we do with the sows during renovation?"

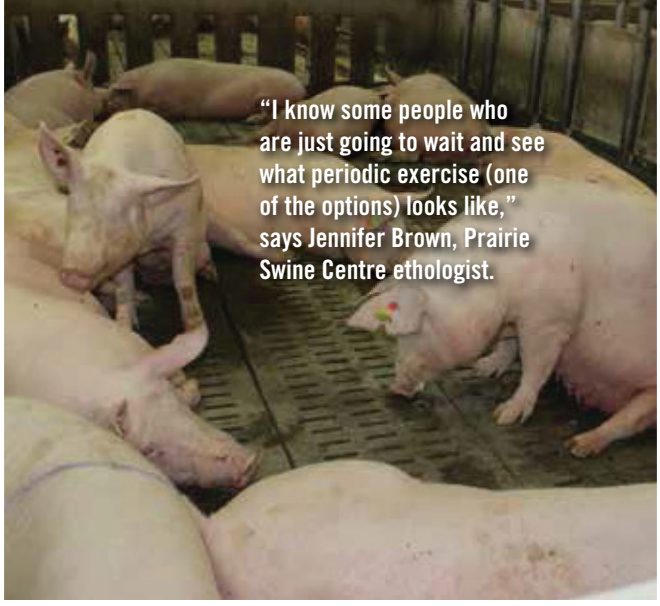
"For the most part, the industry is moving," Eastwood said. "Most producers are looking at options," she said. BP

Seminar takes place at Arden Park hotel and runs from Sept. 6 to 7.

The loose housing revolution: conversion questions

As Ontario pork producers plan the switch to group housing for sows, uncertainty lingers about overall cost, protocols and the industry's ability to meet the 2024 deadline.

by JIM ALGIE



"I know some people who are just going to wait and see what periodic exercise (one of the options) looks like," says Jennifer Brown, Prairie Swine Centre ethologist.

Some estimates have Canadian hog farmers as much as a quarter of the way through the complicated and costly job of converting confinement stalls to group housing for gestating sows.

Nobody seems really to know how much it will all cost, how quickly it can happen or which of many potential systems producers will prefer. The March 2014 publication of the updated Code of Practice for the Care and Handling of Pigs by the Canadian Pork Council and National Farm Animal Care Council drives the conversion effort. Code terms require group housing in new construction and encourage producers to convert fully by 2024. The councils introduced the change to accommodate animal welfare concerns about the confinement of pregnant sows in stalls.

The change was controversial. A year before the code was published, Manitoba producer, Rick Bergmann, now Canadian Pork Council chair, made a staunch public defense of gestation stalls in a *National Post* article on the subject. But much has changed since then, including high-profile endorsements of group housing – known also as open or loose housing – from some of the largest hog processing firms in the world.

Stall options

Prairie Swine Centre ethologist Jennifer Brown, who heads a national project to disseminate group housing research, went out of her way in a recent telephone interview to play down suggestions the new code compels a change. (Ethology is the science of animal behaviour.) She spoke from Saskatoon where she teaches animal science at the University of Saskatchewan and emphasized code options that allow continued stall use. The options provide animals "the opportunity to turn around and exercise periodically or other means that allow greater freedom of movement," she said. The code promises written clarification of those options by July 1, 2019; the options will rely on prevailing science.

"I know some people who are just going to wait and see what periodic exercise (one of the options) looks like," before proceeding to compliance, Brown said.

In 2014, Brown secured a $500,000 grant under the federal/provincial, Growing Forward Two program for producer education about group housing. Producer

meetings, conferences, consultations and a website stocked with research are all part of the program she developed along with former Ontario swine specialist Doug Richards. Her continuing research at the University of Saskatchewan explores sow housing strategies and related technology, particularly electronic feeding systems.

Brown advocates large groups for gestating sows. It's not the only approach, but large groups help relieve social pressure that arises over feed in some group situations.

"If you put them in large groups, like 50 or more sows, then the whole social pressure drops," Brown said. "In a small group it might pay off to be the boss of that small group. But if you've got to dominate a whole large group of animals then the payoff of being dominant is much reduced."

Brown also cites evidence that sows in groups do at least as well as those in stalls. There is reduced lameness and improved individual fitness. There are also fewer piglet injuries after farrowing, which Brown attributes to improved muscular strength among mother pigs in group housing.

Estimates on housing conversion numbers

Asked about producer uptake, Brown guesses that Canadian producers are about 25 per cent converted to group sow housing. However, both she and Ontario government swine specialist Laura Eastwood say the numbers are highly speculative.

"You're seeing way more renovations, mostly in Quebec and quite a few in Ontario," Brown said. Among large western herds, some producers seem to be holding off, although Maple Leaf Foods has completed conversion of eight Manitoba barns, Brown said.

Doug Ahrens was among the province's early adopters of loose housing with a $300,000 renovation/addition to an existing barn. The veteran Perth County producer who has spent 34 years growing pigs, began designing the facilities five years ago for his 650-sow operation near Sebringville.

Drawing on what he has seen and heard as chair of the 2015 London Swine Conference and an Ontario Pork board director, Ahrens figures as much as 30 per cent of the conversion has already happened or is on the books.

"The ship has sailed; the consumer has spoken," he said in an interview.

Feeders make 'a huge difference'

Equipment now available to handle the animals "makes a huge difference," Ahrens said.

His own experience involves relatively large, "dynamic" groups of about 300 animals using a battery of five German-made Weda Dammann & Westerkamp GmbH electronic feeders. For the animals, the conversion has been strongly positive, he

Conversion is a big job, both in husbandry and cost, says Adam Schlegel. Schlegel converted a portion of the 2,500-sow operation at Schlegelhome Farms to loose housing in 2014.

said. After a relatively steep learning curve both for pigs and humans in his business, they're now farrowing 30 animals weekly. They add and remove sows without a lot of the schoolyard bullying that characterized their introductory phase, Ahrens said.

Adam Schlegel converted a portion of the 2,500-sow operation at Schlegelhome Farms to loose housing during the 2014 renovation of barns that dated from 1979. His Tavistock-area farm hosts the first commercial demonstration of Canadian-built SowChoice Systems equipment for groups which came with strong technical support from CANARM Ltd., whose manufacturing facilities are in Arthur.

Even so, the partial transition from gestation stalls to loose housing in one of two barns in the operation has been anything but easy, Schlegel said in a recent phone interview. An outbreak of Porcine Reproductive and Respiratory Syndrome virus during the training phase didn't help.

"Pretty much everything went wrong for us that could possibly go wrong," he said. "That said, it's getting to a point now where we're happy with the product; but it was harder than we anticipated to transition."

Schlegel uses CANARM's electronic feeding gear to manage fine detail and individual feeding for his sows. Then again, he has that level of feed control in stalls. One benefit of the switch to loose housing is a shift in the orientation of husbandry from systems to animals.

"On a day-to-day basis, instead of walking the hallways between crates you're walking through the pens. You reach out and touch the animals. They come up to you and nibble on your coveralls; so from that perspective, I like it. It's animal skills we're looking for now," he said.

Conversion is a big job, both in husbandry and cost. Schlegel figures some operators just won't bother or won't be able to manage the costs.

"I think you're going to see bigger barns and less of them," Schlegel said. BP

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Group Sow Housing Seminar at the Best Western (Arden Park) Hotel in Stratford. The feature speaker, **Dr. Julie Menard** of F. Menard Inc., Ange-Gardien, Quebec, will speak on
"How to make it work".

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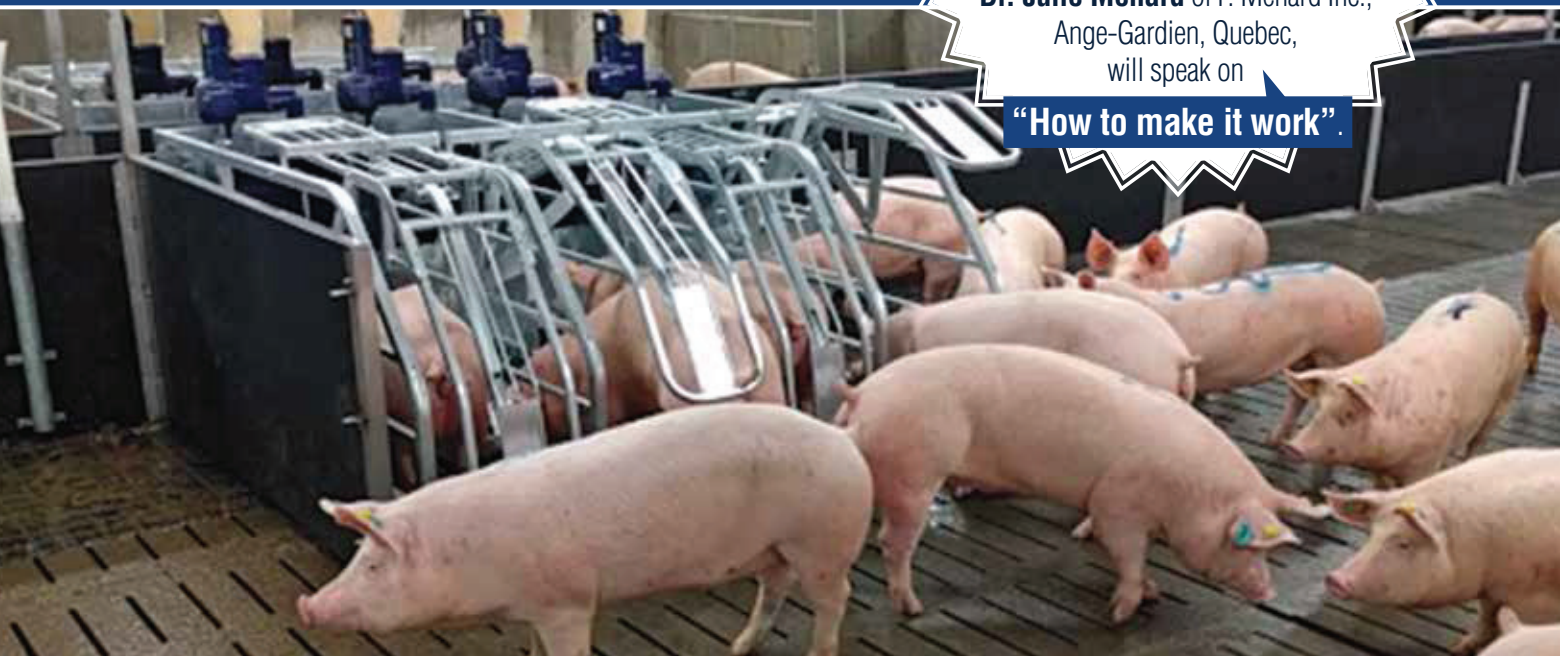

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Opinions differ among hog producers about what's driving the move to group sow housing.

What drives the push to loose housing for sows

by JIM ALGIE

Wholesale conversion to loose housing for gestating sows in Maple Leaf Foods' barns followed a high profile 2015 promise by CEO Michael McCain to enhance animal wellness practices.

The policy included loose housing for all sows under corporate management with a minimum target of 37,000 animals by 2017. It led also to recruitment last summer of former Ontario chief veterinarian Dr. Greg Douglas as Maple Leaf's new vice-president, animal care.

Maple Leaf announcements mirror moves by major U.S. swine-processing firms Cargill Incorporated, Tyson Foods Inc. and Smithfield Foods Inc. Chinese-owned, Virginia-based Smithfield claims ownership of the world's largest swine herd. The company's annual report for 2014 counted 894,000 sows in U.S. operations, all to be raised in open housing by 2017.

A spokesperson for Sofina Foods Inc. in Markham said in an emailed response to questions that the company is "committed" to ensuring the Code of Practice for the Care and Handling of Pigs is followed "to meet or exceed established standards." Sofina took over Burlington-based Fearmans Pork, Ontario's oldest and largest pork processing firm, in 2012.

"We will continue to monitor any developments in this area to improve the welfare of the animals and will work with all stakeholders including suppliers of hogs to ensure this occurs on a timely basis," the Sofina statement said.

Opinions differ among hog producers about what's driving the move, even those already committed to group housing. Huron Country grower and group housing advocate Geert Geene expressed doubts in a recent interview about the growth of interest in farm animal welfare among consumers. He downplayed the trend and even questioned its significance in generating regulatory pressure

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behind sow housing changes.

"It's more what the processors say," Geene said. "Instead of having to pay for an added-value product they (packers) are just trying to ... make it the norm and pay us the same prices for it."

He quickly added that he likes loose housing. "But I'm not going to say that somebody in stalls is bad management. I think a lot of pigs do better in stalls than they do in loose housing," Geene said.

So what's driving the changes?

Prairie Swine Centre researcher Jennifer Brown, who heads a national information program on group housing for sows, describes "changes in societal views and expectations regarding animal care."

"Whether you blame Walt Disney, PETA or urban ignorance, these views are based on a changing perspective on animal management," Brown said. "Instead of focusing primarily on animal health and production, more emphasis is placed on the animal's mental state, including the ability to do a variety of behaviours, or the absence of abnormal behaviours," she said.

"Retailers and packers are responding by requiring changes in production, and sadly, it has fallen on producers to implement these changes with basically no support from packers or retailers," Brown said. BP

"Whether you blame Walt Disney, PETA or urban ignorance, these views are based on a changing perspective on animal management," says Jennifer Brown, Prairie Swine ethologist. Brown was commenting on changing societal views about animal care.

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

Back to the Basics of Feeding Pigs

Reliable nutritional information, whether from book values or laboratory analysis, is important to determine what diet will meet a pigs' requirements to grow, reproduce, produce milk, fatten or maintain its weight depending on stage of life. This information can be obtained from a laboratory feed analysis. Many producers use book values instead of getting a laboratory analysis. When comparing these, laboratory values are more accurate, representing the actual values of each nutrient. For example, lysine levels are often estimated by analyzing for crude protein. Both wet chemistry and near infrared spectroscopy (NIRS) are methods commonly used to obtain parameter values. Wet chemistry measures the nutritional value by drying the ingredient, followed by the use of heat and chemicals. For example, Neutral Detergent Fiber (NDF) is the fiber portion that is not broken down when boiled in a neutral pH solution.

NIRS estimates the nutritional value of the feed using light reflection rather than chemistry to identify and measure amounts of compounds in a sample. The reflectance values are entered into calibration equations, which estimate nutrient values based on a large database determined by wet chemistry. This method is commonly used for obtaining crude protein, moisture, crude fiber, ash and fat. This provides fast, reproducible and cost- effective results with minimal sample preparation by the laboratory.

Each laboratory will have a set of packages available to obtain various parameters based on the customer's needs. Of course the analysis is only as good as the sample submitted to the laboratory. A good sample should be representative of the entire feedstuff sent in for testing. To do so, grab samples from multiple spots and mix them to create a composite sample, and then obtain a sub sample for the testing.

The following are explanations of the terms found on a laboratory report.

Dry Matter

Each feed analysis report specifies the dry matter and moisture of the feed analyzed. The dry matter is the moisture free material left after drying the sample. Moisture dilutes the concentrations of the nutrients present, and it is standard practice to evaluate the feed and balance rations using a dry matter basis. High moisture ingredients may not just affect the concentration of nutrients, it also creates a difficulty when incorporating the ingredient into a practical feeding program. Nutrients present can be classified into five main groups; energy, protein, minerals and vitamins, with the fifth one being water.

Protein

Crude protein (CP) is calculated and based on the nitrogen content of the feedstuff. The soluble portion of crude protein is most readily available to animals. This consists of small amino acid chains, or non-protein-nitrogen. Protein is made up of approximately 16% nitrogen and, in the lab, total nitrogen is measured and multiplied by 6.25 (100/16) to report it on a "crude protein" basis. Without looking at the type of protein CP is made up of, it gives no information on the amino acid content or its availability. It plainly indicates that it contains nitrogen, including both true protein that contains amino acids (the building blocks of protein) and non-protein-nitrogen (NPN). NPN includes urea and ammonia that contain nitrogen.

There are 10 amino acids categorized as 'essential amino acids' which the animal cannot synthesize, or not at a rate to meet the animal's needs. They are Phenylalanine, Valine, Threonine, Tryptophan, Isoleucine, Methionine, Histidine, Arginine, Lysine and Leucine. Since lysine is the most limiting amino acid for pigs, it is used to formulate a diet allowing some amino acids to be in excess. The remainder of the amino acids requirements are expressed as a ratio to lysine and added via protein or synthetic sources. Non-essential amino acids can be synthesized by the animal since they have the ability to convert surplus amounts of one amino acid to another to meet its needs through complex processes completed by enzymes. Nevertheless, both essential and non-essential amino acids are needed for the animal to thrive.

Energy

Energy is obtained from lipids (fats and oils), protein, and carbohydrates such as starch, sugar and fiber. The two primary sources of energy in swine diets are carbohydrates and lipids. Energy from protein is utilized when protein is in excess to the animal's requirements. However, excessive amounts of protein not utilized to its full potential are expensive, may affect feed efficiency and creates excess nitrogen which is excreted into the environment. Energy is calculated and reported as gross energy (GE), digestible energy (DE), metabolizable energy (ME) or net energy (NE) and are very important contributors to the diet to reduce cost while maximizing pig performance. As shown by the NRC in Figure 1, the gross energy refers to the total energy available in a feed. This is then fragmented into DE where the energy of faeces is removed, followed by ME, where the energy for urine and combustible gases is subtracted off of DE to obtain ME. NE accounts for the thermal losses and can be divided according to its utilization; maintenance (NEm) or production (NEp), which includes growth, gestation and lactation. NE is mostly used by nutritionists as it's ingredient dependent; being lower for protein and fiber, but higher for fats and starches. However, DE is probably most likely to be understood and used by producers. If highly digestible ingredients are used, the values for DE and ME will

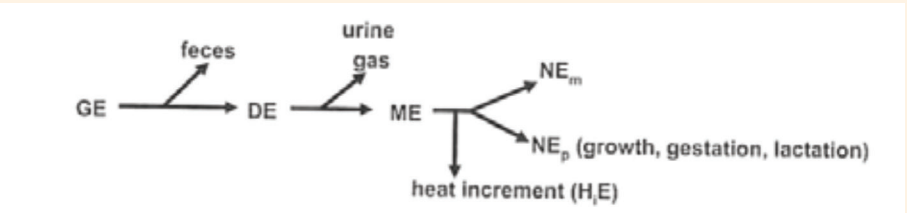

Figure 1. Components of energy in a diet (NRC).

be more accurate. Adding by-products high in fiber to the mix will affect the DE and ME values to some extent due to energy and heat present through internal interactions, making NE a more reliable value. In addition, studies suggest that by using NE values, feed cost and nitrogen excretion can be reduced.

Fats/Lipids/Oils

Fats such as oils and lipids are added to manage energy levels of the diet and vary in digestibility depending on chain length and saturation. Saturated fats are made of single carbon bonds only. The digestibility is affected by the ratio of unsaturated to saturated fatty acids and declines as the ratio falls below 1.6 to 1. In addition, as the length of the chain increases, the digestibility decreases. Price and digestibility are the main factors affecting the determination for ingredients to be used as a fat source. Fats are highly palatable and can be added during extreme heat to provide energy while producing little additional body heat due to digestion. The type of fat can affect the quality of the carcass; feeding high amounts of saturated fats produces high saturated fats in the pigs' body fat and is regularly added to finishing diets for that purpose. Fats added to diets can improve palatability and is also a means to control dust in feed, while acting as a lubricant during the manufacturing of feeds, especially pelleting. However, fats added in excess quantities can decrease pellet quality, impact animal performance and feed efficiency. Fats have more impact on the latter during hot summers than during colder seasons. This is important because if feed intake goes down, the concentration of other nutrients required need to be increased to meet the pigs' demands. The ratio between calories and amino acids consumed must be kept consistent.

For example:

A swine diet consists of 3400kcal/kg DE with 0.85% lysine. A pig eats 1.6kgs/day of this diet, consumes 5440kcal and 13.6g of lysine a day. Heat stress sets in and we increase the energy content of the diet to 3600kcal/kg DE. Assuming the pig still eats the 5440 kcal a day as it adjusts to meet energy requirements, the pig will now eat 1.51kgs/day and was unable to maintain its lysine intake which decreased to 12.8g/day. Therefore, for this particular diet the lysine concentration will need to be increased to 0.9%.

Carbohydrates

Carbohydrates play an important role in providing energy to the animal and are made up of chains of sugars linked together and are named according to the number of single sugars bonds: monosaccharides, disaccharides, and polysaccharides. Similar to protein digestion, enzymes are needed to break down the carbohydrates to make them available. However, monogastrics lack the enzymes to break down complex sugars found in legumes as well as those found in soybeans. For this reason enzymes are often added to the diet.

Starch/Sugar/Fiber

As said before, simple sugars and starches are used as a source of energy for pigs. Simple sugars such as glucose and lactose are great for energy sources for young pigs, but caution is advised when feeding fructose and sucrose as it may cause diarrhea. Due to its costs, sugars are most often used in neonates. Starches are the main energy source, but are not well digested by pigs until they are 3 weeks old.

Fiber is another energy component and is referred to as acid detergent fiber (ADF) and neutral detergent fiber (NDF) and is determined by laboratory testing. Although some nutritionists see these components more applicable to determining a ration for ruminants, it gives an indication of the digestibility and energy available. ADF to refers to the cell wall portion and is made up of lignin and cellulose. The value is important as it relates to the ability of an animal to digest where a higher ADF suggests a decrease in digestibility. NDF refers to the cell wall fraction that includes lignin, cellulose and hemicellulose. Looking at both the ADF and NDF, nutritionists are able to determine the digestibility and energy available to the animal.

Minerals

Minerals are added when the basal diet provides insufficient quantities. Minerals are categorized between macro minerals (calcium, phosphorous, sodium, chloride, potassium, magnesium) and micro minerals (iron, zinc, copper, manganese, iodine, and selenium). Macro minerals such as calcium, phosphorous, sodium, and chloride make up the majority of the required minerals. Phosphorous (P) levels, however, create a concern for the environment and ingredients are evaluated to have a high P digestibility to avoid over feeding and match the animals' needs. Additional phytase is added to aid its digestion, as P is involved in essential metabolic processes. Calcium plays an important role in bone mineralization and is usually expressed as a ratio to total P- typically at a ratio of 1.0 to 1.5, or as a ratio to available P of 2.1 to 3.1.

Vitamins

Vitamins are essential in generating chemical reactions needed for metabolism and almost all are made up of carbon, oxygen and hydrogen. Vitamins are needed in much smaller amounts than any other ingredient, yet there can be adverse effects when animals are deficient. There are two types of vitamins, water soluble and fat soluble. Water soluble vitamins cannot be stored in the pigs' body, and excess is excreted mainly in urine. Water soluble vitamins include vitamin C, thiamin, riboflavin, niacin, vitamin B6 and B12, folate, biotin, choline, and phanthothenic acid. Vitamins A, D, E and K are considered fat soluble and are important for the animal to function and maintain health. Vitamins A and E may be added to the diet separately or incorporated into the minerals as a supplement. This gives the feed manufacturer flexibility in preparing diets based on the stage of life the diet is being manufactured for. Due to their low inclusion rate, these are a small price for the benefits vitamins provide.

Water

In addition to the nutritional analysis of feed, water testing should also be done regularly. Water is often the forgotten nutrient yet is so important. Remember that water makes up 70% of the live weight and body water turnover is higher in young and highly productive animals, especially during lactation. Table 1 shows the water intake of sows, farrow to finish, (Pork Production Reference Guide 2000, Prairie Swine Centre Inc). Water quality must be tested routinely and be free of high concentrations of adverse minerals, sulphates, bacteria contamination, and chemical contamination.

Remember that nutrient recommendations are guidelines containing a safety margin to account for the variation found in ingredients used. Laboratory analyses of ingredients help to create a cost effective and balanced diet while meeting the animals' requirements. In addition, good quality water should be provided, as it is required in greater quantity than any other nutrient.

TOTAL ON-FARM WATER USE ESTIMATE			
	Inventory	Daily Water Use (L)	Total Water Use (L)
Gestating sows and boars	90	15	1,350
Lactating sows and litters	15	20	300
Nursery	250	3	750
Growout	670	7	4,690
Gilt pool	5	8	40
	1,030		7,130
Wash – 10%			713
Total:			**7,843**

NB: Above calculations per 100 sows farrow-to-finish (eg. 78L/sow). Actually usage will depend on the amount of spill from drinkers, the extent of washing and system leakage. Water usage has been reported as low as 65L/sows and as high as 120L/sow. Clearly, more-research is required in this importan anrea.

Table 1: Water use estimates in pork production (PSC).

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Water Line Maintenance

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

Water sampling

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

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

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

Fill the bottle to the prescribed mark and close the lid firmly. Pack the bottles in an insulated cooler until they can be shipped to the local health unit. It is preferable to bring in samples immediately to the lab or within 24 hours after collection for accurate results. Similar protocols would be used for more comprehensive water tests.

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

Water Treatment System

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

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

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

Plumbing

If you are noticing decreased pressure on certain lines or drinkers you may have issues with particulates, scale, biofilm, or all of the above. Particulates can be addressed with high flow filtration, preferably down to 5 microns. This may require staged filtration. Due to Ontario's hard water it is recommended to use acid or "descaler" products as part of your waterline maintenance program. In extreme cases a water softener may be required. Biofilm is a result of iron reducing bacteria. This can be addressed with iron filters or products that can break up and prevent biofilm form forming such as acidifiers, chlorine or peroxide. Left unchecked, water lines can become restricted and biofilm can harbour pathogens resulting in lower animal performance.

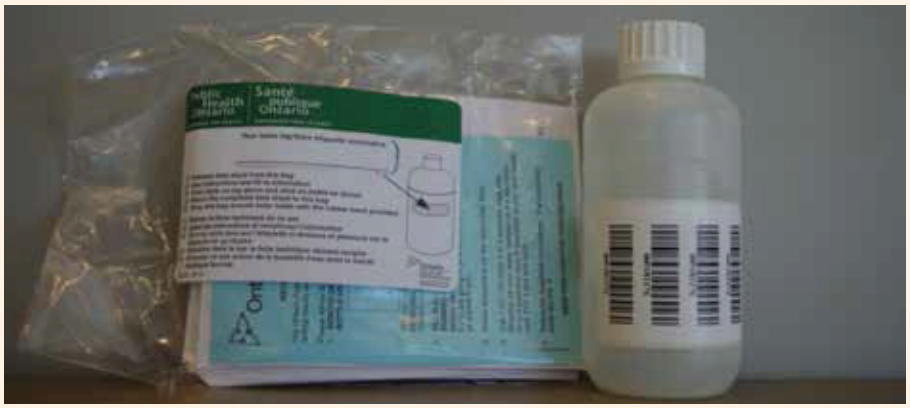

Figure 1: Bottle used for water samples plus instructions for taking a sample and how to send it for testing

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

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

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

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Watkins, S. (2007, August). Water Line Sanitation. Retrieved June 30, 2016, from Avigen: http://www.aviagen.com/assets/Tech_Center/Broiler_Breeder_Tech_Articles/English/AviaTech_WaterLineSanitation_Aug07.pdf
Al Dam, Poultry Specialist, Amanda Bordin and Sabrina McDonald 519-824-4120 ext. 54326 al.dam@ontario.ca

Group Sow Housing Seminar in September

A seminar is planned for September in Stratford. Speakers will include producers, researchers, and others.

Tuesday September 6th, 4:30-9:00pm. For producers who are already using group housing for gestating sows:

Wednesday September 7th, 9:00am-3:30pm followed by social time. For producers who are planning the move to group housing:

For details visit www.groupsowhousing.com and other information on group housing and the National Sow Housing Conversion Project.

Pain Control for Castration and Tail Docking Required as of July 1, 2016

Castration and tail-docking are common procedures occurring in the Canadian swine industry. Castration prevents boar taint, reduces aggressive behaviour and minimizes handling challenges often encountered with intact males. Tail-docking helps to prevent tail-biting, which is a significant welfare and economic problem within the swine industry.

The Canadian Veterinary Medical Association (CVMA) states that castration is a painful procedure for swine at any age. Pain is defined as an unpleasant sensory and emotional experience associated with tissue damage. The CVMA recommends that, "when castration of piglets is required, it should be performed between the ages of three to seven days with the use of appropriate analgesia." The use of an effective and approved analgesic is an important part of our commitment as caretakers to eliminate or reduce unnecessary suffering whenever possible. Furthermore, research has shown that pigs recover more quickly following painful procedures when analgesics are provided.

As of July 1, 2016 the Code of Practice for the Care and Handling of Pigs (NFACC, 2014) requires the use of analgesics during castration and tail-docking to help control post-procedure pain.

According to the Canadian Pork Council, all producers registered on the CQA® program must adhere to the existing CQA® policy and all CQA® validators will assess and verify their compliance to the program.

Analgesic Versus Anesthetic

An analgesic is a type of drug that causes pain relief. Analgesia can be given prior to a procedure in order to provide pain control throughout and after the procedure. Two main analgesic classes are non-steroidal anti-inflammatory drugs and corticosteroids. An example of a non-steroidal anti-inflammatory is Meloxicam.

An anesthetic is a drug used to depress neurological function eliminating the sensation of pain. Lidocaine is an example of a local anesthetic that could be used during piglet castration. Anesthetics require time in order to provide effective pain control. The use of an anesthetic (in conjunction with an analgesic) is required for pigs castrated after 10 days of age.

Products For Pain Control

Recently, a product has been approved for the relief of post-operative pain associated with minor surgery such as castration of piglets in Canada. Consult with your veterinarian about product availability, treatment options and meeting CQA® requirements.

References
Code of Practice for the Care and Handling of Pigs. 2014. National Farm Animal Care Council.
Canadian Hog Producer Manual. 2007. Canadian Quality Assurance Program.

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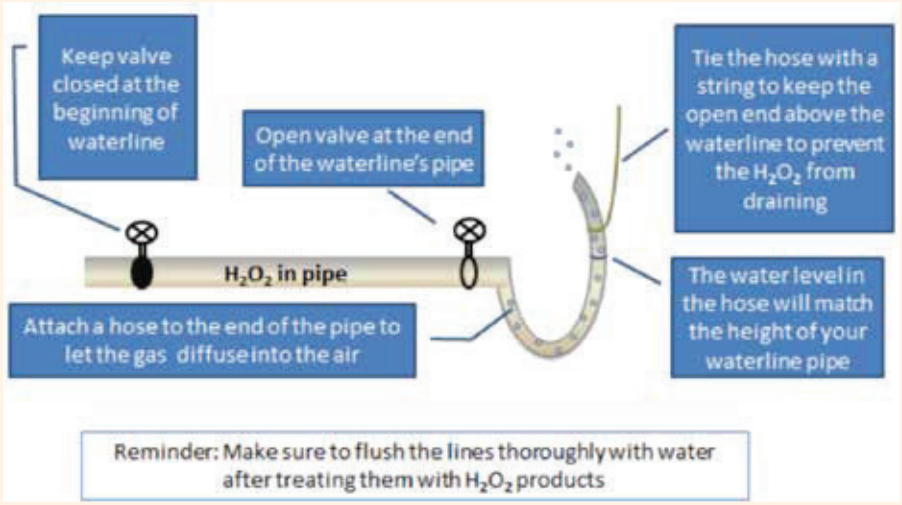

Figure 2: Schematic of waterline with hydrogen peroxide products and hose at end to release gases produced from product.

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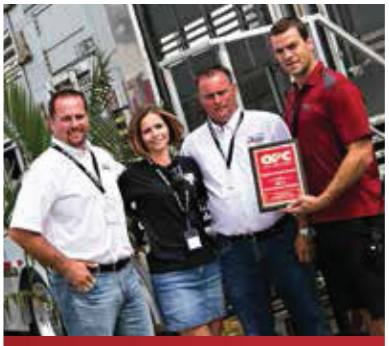

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Ontario

Swine Budget – June 2016

Compiled by OMAFRA Livestock *OMAFRA.Livestock@ontario.ca*

Income ($/pig)	Farrow to Wean	Nursery	Grow-Finish	Farrow to Finish
Market Pig @ 101% of Base Price $187.70/ckg, 110 index, 100.66 kg plus $2 premium				$211.91
Variable Costs ($/pig)				
Breeding Herd Feed @ 1,100 kg/sow	$13.54			$14.85
Nursery Feed @ 33.5 kg/pig		$15.25		$16.07
Grower-Finisher Feed @ 272 kg/pig			$82.99	$82.99
Net Replacement Cost for Gilts	$2.04			$2.24
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	$0.28	$0.93	$1.49
Total Variable Costs	**$30.57**	**$22.33**	**$97.14**	**$154.19**
Fixed Costs ($/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	$13.54	$15.25	$82.99	$113.91
Other Variable	$17.03	$7.08	$14.15	$40.28
Fixed	$6.90	$3.52	$12.48	$23.76
Total Variable & Fixed Costs	**$37.47**	**$25.85**	**$109.62**	**$177.95**

Summary	Farrow to Wean	Feeder Pig	Wean to Finish	Farrow to Finish
Total Cost ($/pig)	**$37.47**	**$64.85**	**$136.86**	**$177.95**
Net Return Farrow to Finish ($/pig)				**$33.96**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) includes 101% Base Price & $2 Premium				**$157.34**
Farrow to Finish Breakeven Base Price ($/ckg, 100 index) excludes 101% Base Price & $2 Premium				**$160.72**

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

The loose housing revolution: Pinpointing the right time to build

Investment in sow-housing conversion will vary from producer to producer. Whether the project be large or small, there is no better time to get started than the present, suggests one industry expert.

by JIM ALGIE

Now may be as good a time as any for group sow housing projects to comply with pending measures in the new Canadian Code of Practice for the Care and Handling of Pigs. The measures take full effect in 2024.

Interviews in early June with Ontario equipment suppliers and builders reflect active construction and planning for sow housing projects to comply with new measures in the code.

The rules require producers to introduce more movement and/or group housing within the next eight years for gestating sows. Based on current data showing 1.2 million sows and gilts in Canada, a total shift to group housing would cost millions of dollars, but the cost to individual producers will vary because conversions range in complexity. Some conversions will involve relatively minor interior renovations. Others will involve the installation of roomier, "freedom stalls" and high-tech feeding systems designed to track individuals and minimize conflict that can arise among sows in groups.

Better to move now than, say, 2014 when the new code was introduced. It was also the year one of the province's largest pork packers, Quality Meat Packers Limited in Toronto, went bankrupt leaving millions of dollars in consequences for the firm's hog-farming creditors in Ontario. That incident followed a period of distressingly low hog prices and disruptive U.S. country of origin labelling (COOL) for imported pork.

But the end of COOL, together with improved hog prices and Canada's relatively weak dollar position relative to U.S. currency, has strengthened the position of Ontario growers.

Sow housing conversion projects range in scope and in cost from as little as $500 per sow space through $2,000 and beyond.

Statistics Canada estimates show a slight decline in hog farms nationally to 6,965 during 2015 but an increase in hog population. As of Jan. 1, StatsCan counted 1.2 million sows and gilts, up 1.6 per cent from January, 2015.

Canada exported 16.4 per cent more hogs in 2015 compared to 2014. Domestic hog slaughter rose 4.2 per cent to 21.3 million head.

Hog industry economist Ken McEwan counts several current plusses in all this.

"Ontario is still very fortunate in that we still have two packers," he said, referring to the province's largest packers, Sofina Foods Inc. and Conestoga Meat Packers, in a telephone interview from his office at the University of Guelph's Ridgetown College. And there are opportunities for smaller packers to grow.

"We still have a large urban market that needs to be served," McEwan notes. "Close to a third of Canada's population lives in Ontario."

Proximity to U.S. markets and current processing capacity in Quebec capable of accepting Ontario hogs are also positive factors, McEwen said. A strong exchange rate advantage, relatively stable feed costs and relatively strong hog prices make what McEwen describes as "a pretty nice mix" for Ontario producers.

Although individual decisions will depend on the financial position and planning of individual farm operators, McEwen figures it's a good time generally to be looking at capital improvements. That's particularly so in operations with depreciated buildings and equipment.

Projects will range in scope

Projects range in scope and in cost from as little as $500 per sow space through $2,000 and beyond. It can be everything from reworking existing buildings and retaining old school floor feeding to complete new buildings and turnkey installation of more costly electronic feeding systems.

"It's kind of like renovating your house," FGC Ltd. designer Murray Elliott said in an interview from the construction company's Sebringville-area office. "The variation is large."

Simple adjustments can cost as little as $7 to $10 a square foot. Add new digital feeding equipment, structural complications or personal improvisations, the costs double and triple.

Although they've done some renovations and new builds already for group housing, FGC expects a gradual increase in business as 2024 approaches, Elliott said.

"With a lot of people there's no huge hurry right now," he said. "If their equipment is still good, they might as well wear it out, right?"

Producers approach such upbeat industry forecasts with caution. Veteran Perth County grower Doug Ahrens of Sebringville, an early adopter of group

sow housing, warned others considering the group housing move to watch their costs.

"It's like any other business," Ahrens said. "You take your lumps, become efficient, watch your expenses and that's the way we do it."

Electronic feeding systems

The installation of electronic feeding systems as part of the group housing change seems of particular interest to growers. Since 2014, the range of available electronic feeding equipment has expanded and now includes two Canadian manufacturers, both keying in on the sow housing shift. In each of the past two years, Jyga Technologies in Quebec and CANARM Ltd. in Brockville have introduced new sow housing and feeding products at hog industry trade shows.

In 2014, CANARM recruited former Ontario Pork chair Curtiss Littlejohn to head its swine products division with manufacturing facilities at Arthur, Ont. Littlejohn has overseen the introduction of CANARM's SowChoice products designed and built in Arthur to employ PigCHAMP-brand, management software. His marketing effort emphasizes potential for precision feeding of sows to achieve improved efficiencies and to meet individual needs. (PigCHAMP Inc. is a member of the Farms.com group of companies.)

Jyga Technologies in St. Lambert-de-Lauzon markets the Gestal XM computerized system for sow groups with radio frequency, ID readers mounted on stall-type feeding stations. The system builds on basic "freedom stall" concepts popularized by manufacturers such as Vissing Agro of Denmark but adds installation and maintenance cost advantages of wireless communications, an independent agent for Jyga in Ontario, Blair Gordon, said in an interview.

Ontario dealers also represent the world of hog equipment. Fancom BV and Nadap N.V. of Holland, WEDA Dammann & Westerkamp GmbH and Big Dutchman AG of Germany, MPS Agri Ltd. of the U.K., Kansas-based Osborne Industries Inc. and Illinois-based, AP (Automated Production Systems, a brand of AGCO Corporation), all market the equipment they manufacture for group sow housing set ups through Ontario dealers.

Designer Frank Hogervorst of Avonbank Ag Solutions in Granton, Ont. works with PigTek Pig Equipment Group and Fancom, both owned by Indiana-based CTB Inc. Hogervorst describes "very keen interest" among his clientele.

"I've got a couple of new, large barns that are happening this year and already a couple for next year, and those will all be loose housing," Hogervorst said by phone from Des Moines where he was demonstrating equipment during World Pork Expo. However, he also predicted most jobs will involve renovation and/or electronic feeding.

"It's very much comparable to robotics in milking cows," he said. "They went through their learning curve but the stations have been operating in Europe continuously now for 20 years; so we're really bringing European technology to Ontario and we're using everything they've learned." BP

An electronic eye on farrowing

One large-scale trial shows that the use of a data logger that monitors both sow and staff performance during litter births added an extra 2.3 weaners per sow per year. And that gain was in a Danish herd already selling 33 hogs per sow.

by NORMAN DUNN

Niels Veng's swine husbandry aid looks like an ordinary hand-held data logger. But this inventor's concept, called LISA2, not only allows all litter details to be punched in while attending a farrowing. It also has a wireless link with the herd computer. Here, the manager can set a monitoring schedule for every sow in the farrowing barn, for instance requiring attendance every four minutes during the birth process.

Does the resultant in-depth monitoring improve herd performance? The answer is "yes," according to results from a three-month test in a Danish 1,200-sow unit. This herd already achieves an output of 33 weaners per sow and year. Twenty-four hour surveillance supported by the LISA2 resulted in an extra piglet per litter saved at farrowing. Even where a stockperson was on duty in the farrowing barn during the day shift only, the system helped increase live piglet numbers by 0.5 per litter. Moreover, subsequent litter mortality up to weaning in this trial was reduced by three per cent compared to herd performance before the LISA2 system was introduced. Niels Veng points out that the 0.5 piglet per litter increase equates to an extra 1.7 pigs per sow per year in this herd. When the recorded three per cent reduction in deaths from birth to weaning is also considered, this trial gives an increased average annual output of 2.33 weaners per sow in an already very high performance herd.

The LISA2 logging system is set for launch in the U.K. and France this summer after extensive testing in commercial herds in Denmark and in a Russian herd too. Manager of the British launch is Mark Cox.

Sales manager Mark Cox pictured here with the LISA2 data logger. He says the new system not only helps to precisely monitor sow farrowing performance, it also represents a continual check on the level of stockperson attendance during birth.

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"The system sees each sow allocated an individual LISA2 logger when penned for farrowing," he explains. "The sow herd number is scanned from a transponder or punched in." Time and date of first attendance is automatically logged, as is the sow's medical history and treatments, these details coming automatically from the herd computer. When farrowing starts, the stockperson taps in details of (piglets) born alive and dead. During farrowing, the individual LISA2 data loggers are hung on special hooks above each farrowing pen. Pre-set surveillance intervals during farrowing are fed in from the herd computer, and the LISA2 features an acoustic/visual alarm to remind the attendant. If an alarm is ignored or tampered with, this is also noted by the herd computer. The LISA2 data loggers will sell in Europe in batches of 10 at a total price equivalent to C $3,770.

Time-out for the heaviest sucklers

A new timed-lock system that keeps the heaviest newborn piglets away from Mum's milk to give a better chance to weaker piglets is proving a litter lifesaver in Danish trials. Another brainwave from the innovative Danish engineer Niels Veng and his team at Farm Innovation, the so-called VE 925 Split Suckling Aid, is designed to allow the firstborn a good drink of colostrum after which they can be locked away for a period, allowing weaker piglets free access to the udder. The Split Suckling Aid takes the form of an enclosed creep area (usually where the piglets sleep between suckling bouts). There is a solid fibreglass barrier in front of this enclosed creep area and this barrier has a small door in it. The door can be kept closed with a time-lock. Inventor Niels Veng says the procedure of locking up the heavier litter members after they have had a drink might have to be carried out several times during the first day with litters that are particularly big or non-uniform. "Current breeding successes are giving us viable litters often topping 14 live piglets. Making sure that all litter members get that important first few drinks of colostrum makes all the difference to piglet survival, and therefore breeding herd profit at the end of the day."

Because the creep locking system is only required for the first day post-farrowing, a single Split Suckling Aid unit actually serves around 70 breeding sows in a year, reckons Niels Veng. Each unit comes with a meter for setting the magnetic closing and opening system. A digital display shows the time remaining before opening. Battery level is also indicated. If the battery fails, the lock is automatically released. Charging of the lithium-ion batteries is normally required every two months or so,

When closed, the Split Suckling Aid creep door keeps heavier piglets under detention for a few hours after they have had their first drink of colostrum. This automatic system allows later-born and weaker piglets a better chance at the udder and can help reduce pre-weaning mortality.

according to the inventor. Price for the magnetic door kit and timer in Denmark this summer is the equivalent of C $305.

A conservative estimate suggested by Niels Veng puts death rate of otherwise fit litter members through not getting enough colostrum at one to two per cent. "On top of this, the Split Suckling Unit helps avoid the scrummage of youngsters around the sow in the first day, a tussle which often results in at least a few piglets being crushed."

Swine production: European performance

Pork production earnings in the EU still fail to break even and cover costs this summer. The good news is that feed prices have also been decreasing, with feed wheat down to the equivalent of C $168 per tonne and imported soybeans fetching sometimes less than $440/t. The latest complete figures for physical performance cover only 2014, although partial 2015 results paint a similar picture. For 2014, InterPIG, the EU swine statistics service, reports an average 26.53 piglets weaned per sow (11.52 per litter). Piglet mortality to weaning (a mean 27 days) averages 12.9 per cent. Growers up to 30 kg liveweight return a mean daily gain of 419 g. The averages for feeding barn performance through to slaughter include a daily liveweight gain of 793 g and feed conversion ratio of 2.85. Slaughter hogs per sow presents the widest range in physical results from country to country. In rounded-off figures, leaders here are Denmark and the Netherlands, both with 28 per year. Next come Belgium and Germany (26), then Ireland and Spain (25 and 24).

According to InterPIG, the highest costs of pork production are in Italy at the equivalent of $2.88 per kg deadweight. The main reason for this is the higher slaughter weights. In Italy, hogs for specialty ham and sausage production are fed until they tip the scales at 160 kg and over. Swedish hog farmers face the next-highest costs of $2.73/kg deadweight, mainly through higher welfare requirements than most of the EU (e.g. more barn space per hog) and dearer hired labour. The EU average cost of production in 2014 was $2.45 per kg of meat produced.

EU hog farming costs

Inputs	C$ per kg deadweight
Feed	1.59
Fixed costs	**C$ per kg deadweight**
Labour	0.23
Building, finance and misc.	0.56

Based on InterPIG average figures for Europe in 2014.

Ladies in PIGS is a group of women that helps promote the pork industry in Britain. It got its start 25 years ago.

Women in Britain's pork industry promote the bacon

Low pork prices this summer mean hard times for the swine sector throughout Europe, with the equivalent of C $15 loss for every slaughter hog produced. However, U.K. hog farmers at least have useful pork marketing help from a unique band of volunteers: a 300-strong team with the attractive acronym of LIPS (Ladies in PIGS). These supporters are the wives and girlfriends of hog farmers, or are women with other connections in pork marketing and processing, and they travel the country promoting sales of homegrown pork.

LIPS got started during a similar income crisis exactly 25 years ago. Back then, a few hog farmers' wives decided to help their family businesses by turning up at county fairs to prepare and sell bacon sandwiches or sausages made only from top quality British pork. Then, as now, the comparatively high-cost British sector was losing sales on the home market through cheaper pork products imported from the European mainland. Beating the drum for the home-produced pork proved successful. Public awareness of British pork has continually increased, according to the sector's national organization AHDB Pork (UK Agriculture and Horticulture Development Board—Pork).

Long-serving LIPS chairperson is Sue Woodall. "I've a lifetime of dealing with pork and pork products behind me, so it was second nature to help promote the home industry," she recalls.

Sue and her team nowadays visit 60 to 70 events with their LIPS mobile kitchen each year. Schools are also visited for daylong pork promotions and now about 40 corporations are involved in sponsorship of the LIPS initiative. Largely through LIPS input, pork is now guaranteed a place in the school curriculum as part of a "Farm to Fork" program, telling kids — and teachers — all about agriculture and its food supply chain.

An oil change for sows reduces weight loss

Litters get larger, and so good sows must produce more milk. One negative result is that sows often lose a lot of weight and condition during suckling, with detrimental effects on subsequent conception and litter size.

Could there be a feed ingredient out there to help prevent this weight loss? Seeking an answer to this long-asked question are scientists at the Futterkamp Agricultural Research Centre and College in north German Schleswig Holstein. They've found a promising feed supplement in this respect: conjugated linoleic oil. First tests with a small portion of this omega-6 oil in lactation rations

First tests with a small portion of this omega-6 oil in lactation rations really did reduce sow weight loss.

really did reduce sow weight loss. The Futterkamp researchers went on to test the polyunsaturated supplement with the same sows during a second suckling period with even more impressive results. After a second farrowing, average sow weight loss in trials turns out to be just half that of sows on a conventional lactation diet.

One reason for the linoleic-fed sows losing less weight can be seen in the analysis of the milk they produce. This has lower milk fat levels. While this doesn't appear to affect piglet weight gain significantly, the reduction in milk fat output means the sows need less dietary energy and can therefore retain more body condition during suckling.

This, at least, is one conclusion from the Futterkamp trials where more than 200 sows were split into control and trial groups, with the latter having 0.5 per cent of soy oil in their rations substituted by conjugated linoleic oil.

At first farrowing, there was a slight difference in weight loss between the two suckling groups: an average 15.6 kg loss between farrowing and weaning for the linoleic sows and 18.7 kg for control. However, the second time around in the farrowing barn with the same sows showed a much more significant difference. The average linoleic sow lost only 12.5 kg bodyweight while control sows weighed 21.9 kg less at weaning.

Fat content in the respective milks between day eight after farrowing and day 14 was recorded as 68.8 g/litre for the linoleic trial sows and 75.8 g/l for the control group members. **BP**

A cure for condition loss at suckling?

Milking ration containing	Soy oil	0.5% conjugated linoleic oil
Total farrowings involved	172	178
Average born alive/litter	15.9	16.3
Average birth weight (kg)	1.3	1.3
Weaned per litter	12.6	12.6
Average weaning weight	7.7	7.6
Daily liveweight gain per piglet (g)	244	238
Sow weight loss during first suckling (kg)	18.7	15.6
Sow weight loss during second suckling	21.9	12.5

Sources: Futterkamp Agricultural Research Centre and College; Schleswig Holstein Chamber of Agriculture.

Farming for the generations

For this Oxford County farmer, hog production became a way to revitalize the family farm and prepare the way for its future.

by ANDREA M. GAL

Editor's note: As a longtime reader of ***Better Farming***, I've always enjoyed the Up Close articles. They're a chance to gain a sneak peek into daily life and farm management with a range of producers across the province. As I've settled into my new role with ***Better Pork*** and ***Better Farming***, getting to meet and interact with some of our readers, other farmers have shared their enjoyment of these articles. Consequently, our editorial team has decided to feature some of the province's pork producers in the newly-introduced Up Close department in ***Better Pork***.

Our first interviewee is Steve Scott, a third-generation Oxford County farmer, whose family farm includes both cash crop and pork finishing operations. During our June visit over coffee, Steve's emphasis on family, past, present, and future was clear. His grandfather, Harry Chattington, was the first member of the family to farm in Oxford County. The family originally focused on cash crops and dairy but they also "had some pigs."

When asked when he started farming, Steve responded simply: "when I started to walk." He explained his involvement expanded after he finished high school. Steve himself "was a dairy farmer until I was 28 years old." But, he said, "With the price of quota and new buildings, we decided to make the switch to finishing. The age of the barns was a contributing factor. It seemed like a good time to make a fresh start."

Steve's father remains active in the operation, and Steve said that "the fourth (generation) is approaching." (Indeed, shortly after the interview, Steve and his wife, Stephanie, welcomed the arrival of their first grandson, Blake Steven. It is always hard to know what the future holds, of course, but the new little one might ultimately join the family business as the fifth generation.)

Steve's passion for the industry was evident. As our discussion wound down, he brought up a topic generating a lot of buzz in the farming community: social licence, with particular reference to animal welfare. (According to the Canadian Federation of Agriculture, "social license can be defined as the ongoing level of acceptance, approval and trust of consumers regarding how food is produced.") He stressed farmers' empathy towards animals. He said these intuitions can support education and industry adherence to the National Farm Animal Care Council's (NFACC) Codes of Practice.

Describe your role on your farm operation?
General management. All-round labourer. General work duties.

Hours you spend in the barn per week?
That's hard to nail down. It is safe to say more than 40. But it isn't all the same every week; the time commitment depends on a range of activities, like shipping and receiving, gilt selection, and tagging.


Steve Scott

Hours you spend in the office per week?
About two.

How many emails do you receive per day?
Probably eight.

How many text messages do you receive per day?
That we can see a lot of. Average of 15. Probably more. The phone is never more than an arm's reach away!

Hours a day on a cell phone?
Talking (and) everything? Oh shoot – I bet an hour or more.

What type of smartphone do you have?
iPhone 6. (Steve and I discussed our shared preference for the 6 over the iPhone 5; the bigger screen is handy, as is the larger keyboard. He considered the iPhone 6 Plus but decided it would be too frustrating to carry the 5.5-inch (diagonal) screen, as opposed to the more standard 4.7-inch screen of the 6.)

Email or text?
I like text. Quicker to access. Plus history — I can easily look back and reference an earlier discussion.

Any favourite apps?
Probably weather. Just the Weather Network.

Hours a day on the Internet?
Half hour to an hour, maybe. And it's not always business — sometimes I'm checking out fun sites, like ones showcasing parts for my bike! (Steve owns a 2013 Harley-Davidson Fat Boy.)

How often do you travel?
We (Steve and Stephanie) used to be heavily involved in motocross racing. Now, we just take short road trips on our motorcycles. We never go more than an hour from home. It's just a Sunday thing.

Where did you last travel to?
We keep it simple. We often go to Port Dover and Port Burwell. Lakeshore Road is a nice little cruise. The trail follows the shore of the lake (Lake Erie). Usually, we'll end up at Port Burwell and get something to eat before we come home. There are a lot of nice roads around Paris. We don't go to Port Dover on Friday the 13th, though — that's way too busy! Any other day through the summer is like a mini bike show, minus the crowds.

What do you like best about farming?
Geez, there's probably a lot of things. No dress code! You can't make all of your own rules, but you get to make some. Farming probably gives you the biggest variety of tasks. And, working with your family — doesn't everyone like that?

What do you like least?
Nothing comes to mind.

What is the single most important advice you've received or lesson you've learned?
Probably the most important thing is to show people that you're reliable. That's what makes or breaks people, I think — whether they are reliable or trustworthy. That (quality) probably even trumps smart and ambitious!

What's your management philosophy or guiding management principle?
It's pretty hard to nail that down to one thing. Manage your stress. That's probably the key to most of it. (Stress management) is a pretty big thing. You can have a lot of great things behind you, but if you can't control your own mood, you can't do much, right?

What's your advice for working so closely with multiple generations?
Probably the hardest thing, rather than focusing on what's in front of you, is try not to take them for granted. That's the biggest difference between family and someone on the outside – the family member has to be there.

What are your hobbies or recreational activities?
Going out on the Harley with Steph.

What's your most important goal?
Probably just to make sure something is there for the next generation. That's my big job.

How do you define success?
Just generally being satisfied with what you do, really. Success can be defined a lot of ways. It's not just money for everybody.

Is your farm vehicle messy or neat?
It's fairly well organized, but not as clean as it should be.

What are three items that are always to be found in your pickup?
Flashlight, a few tools, change for Tim Horton's.

What are three items that are on top of your desk?
Calculator, pen, paper. Steph has the laptop!

What was the last piece of equipment you bought for your shop?
A new cable for the welder.

What's the best time of day?
Evening – because you can call it done for the day. Definitely not morning! **BP**

Reproductive failure from noninfectious causes

In the third of three articles, the author reviews the major noninfectious causes of reproductive failure in swine.

by ERNEST SANFORD

When we encounter reproductive failures (e.g. abortions), we almost always expect they occurred because of some infection (viruses, bacteria, etc.). It may come as a surprise that until the appearance of porcine reproductive and respiratory syndrome (PRRS) nearly 30 years ago, the majority of reproductive failures had nothing to do with infections. They occurred from noninfectious causes which are often difficult or impossible to pinpoint.

Today, a large percentage of abortions can now be attributed to PRRS virus. We do know, however, of some of the more frequent noninfectious causes of reproductive failures in swine which still occur. Here are some which we can verify.

In our domestic swine, progesterone levels are low and decreasing during late summer and into fall, leading to speculation that our sows are on a tenuous threshold for maintaining pregnancy at this time.

Small number of fetuses

Sometimes after a pregnancy has been established and the fetuses successfully implanted in a multiparous species (species that produce litters or large numbers of offspring in each pregnancy) like pigs, there is a low number of fetuses in the pregnancy. At some point during early pregnancy, a decision is made to terminate the pregnancy and start over again, hopefully getting a more acceptable number of viable fetuses in the next pregnancy.

High ambient temperatures

Anything that spikes a high temperature >39 C is capable of triggering an abortion in sows. This can be the result of an infection or just high ambient summer temperatures if some sort of cooling is not made available to the sow. There is some evidence that low progesterone levels in the sow may play a role in contributing to the reproductive failure in the face of the high temperature. I'll address the relationship to low progesterone a little later.

Fall abortions (Autumn Abortion Syndrome)

An increase in abortions is observed in temperate climate regions of pig-producing countries. The abortions are often associated with very cold nights (≤0 C) following relatively mild fall days (10-20 C). Abortions occur in stalled sows located at the ends of rows, near to doors or outside walls. Several sows may abort overnight. One theory to explain the rash of abortions under these conditions goes back to observing nature's role for the sow. Pigs in the wild produce one litter a year. Breeding occurs in the late summer and fall; sows are pregnant over the winter and farrow in the spring. Since sows are polyestrous (can come into heat throughout the year), we have converted them to being pregnant several times a year and at any time of the year. High levels of progesterone in mammals is synonymous with maintenance of pregnancy. Measurements of progesterone levels in the European wild boar reveal high levels of progesterone in the summer and fall. In late winter and spring when farrowings occur, progesterone levels fall off in preparation for farrowing. In our domestic swine, progesterone levels are low and decreasing during late summer and into fall, leading to speculation that our sows are on a tenuous threshold for maintaining pregnancy at this time. Hence, any adverse change to the pregnant sow at this time (eg. stressors such as large sudden fluctuations in temperature overnight) combined with the low levels of progesterone makes the sow subject to aborting.

Mycotoxins

According to the Merck Veterinary Manual, "The estrogenic mycotoxins zearalenone and zearalenol interfere with conception and implantation, causing infertility, embryonic death, reduced litter size, but rarely, if ever, abortion. Another class of mycotoxins, the fumonisins, causes acute pulmonary edema in swine; sows that

recover from the acute disease often abort 2–3 days later."

Other toxic causes

Cresol sprays (used for mange and louse control) can cause abortions and stillbirths. Other toxic causes include dicumarol and nitrates. "Nutritional causes of reproductive failure are not well defined," according to the Manual. "Vitamin A deficiency can cause congenital anomalies and possibly abortions. Riboflavin deficiency can cause early premature births (14–16 days), and calcium, iron, manganese, and iodine deficiencies have been associated with stillbirths and weakborn pigs."

Propane heaters and carbon monoxide poisoning

Propane heaters are commonly used to heat farrowing rooms and gestation barns in winter. Propane heaters exhaust carbon monoxide as a by-product of generating heat. Carbon monoxide converts hemoglobin in mammals to carboxyhemoglobin. Hemoglobin is the carrier of oxygen which is transported in blood to all tissues and cells throughout the body. Carboxyhemoglobin does not have the oxygen-carrying capability of hemoglobin, hence when present, deprives the body of life-dependent oxygen. Fetuses are highly sensitive to carbon monoxide intoxication, much more so than newborns and mature mammals, including pigs. Ventilation in winter is reduced in barns to conserve heat and reduce energy costs. Carbon monoxide toxicity due to faulty propane heaters and/or poorly ventilated rooms has been associated with increased numbers of abortions, stillbirths and weakborn pigs which usually die soon after birth. Fetal tissues are cherry red, a sign of carboxyhemoglobin and carbon monoxide intoxication. Sows are not usually clinically affected unless carbon monoxide reaches very high levels. Pregnant women working in areas with propane heaters may also abort, creating a public health safety concern.

Summary

Prior to PRRS virus, we did not have a confirmed diagnosis for the vast majority of abortions in swine. Most abortions prior to PRRS were from non-infectious causes rather than by any infection (viruses, bacteria, etc.). The non-infectious causes of reproductive failure are scattered among a handful of known events. These include low numbers of fetuses in a pregnancy, high ambient temperature, autumn abortion syndrome that is probably linked to low progesterone levels in pregnant sows during late summer and fall, carbon monoxide poisoning from propane heater exhausts to heat barns in winter, mycotoxins (zearalenone, zearalenol and fumonisin), and possible vitamin deficiencies (vitamin A and B2 [riboflavin]). **BP**

S. Ernest Sanford, DVM, Dip Path, Diplomate ACVP, is a swine veterinary consultant in London, Ontario.

Ontario perspectives of World Pork Expo 2016

by BOB BRCKA and SCHAE GREENZWEIG

More than 20,000 visitors attended the World Pork Expo (WPX), which ran from June 8 to June 10 in Des Moines, Iowa. According to the National Pork Producers Council (NPPC), the organizers of the event, the WPX is the "world's largest pork-specific trade show."

A big part of the draw to the Expo is the trade show. This year, 350 exhibitors occupied a space the equivalent of more than five NFL football fields. The WPX also featured seminars on topics such as weaning, cybersecurity and regulations surrounding antibiotics usage.

There was a strong international presence at the Expo: according to the NPPC, 1,100 visitors travelled from 40 countries. Many of the exhibitors also travelled from notable distances, including Australia, China, Denmark and Spain.

Staff from PigCHAMP, a member of the Farms.com group of companies, caught up with some Ontario exhibitors and asked them their reasons for attending the WPX and the benefits of the event. Here are their answers. **BP**

Paul Fallis, international sales and market development, with CANARM AgSystems, said he was at the WPX to highlight the company's electronic sow feeder. "With some of the changes in some of the sow regulations throughout North America, we felt we needed to be in this business and that is why we're at the show." CANARM Ltd.'s AgSystems brand operations are located in Arthur.

"The WPX is a great show because it allows us to connect with people from all over the world … we see a lot of Canadian producers here as well," said Kevin Dalrymple, marketing/sales representative with Ketchum Manufacturing Inc. The company is located in Brockville and offers animal identification products, including ear tags and tattooers.

The Expo "is really a great opportunity (and) a great experience to be a part of," said Will Renner, Midwest territory sales representative with MSW Plastics in Palmerston. It's a chance "to meet a lot of new faces and businesses." MSW produces such items as Norlock PVC panels and planking.

Dennis Nuhn, president of Nuhn Industries Ltd. of Sebringville, shows one of his company's Electra-Steer manure spreaders. The company has attended the show for the past 10 or 15 years, Nuhn said. "This year has actually probably been the best show we've had in recent years. It's a good sign that the hog industry is alive and well."

Chinese import growth shapes hog futures

Expect strong market demand for pork to continue well into the fall, predict Farms.com market analysts.

by MOE AGOSTINO and ABHINESH GOPAL

According to the United States Department of Agriculture, China's pork import growth could last into 2017. U.S. pork exports to China/Hong Kong doubled in April to 74 million pounds. China's own pork producers continue to struggle to meet domestic demand as environmental restrictions continue to hamper China's pork industry expansion. Chinese prices for feeder pigs and live slaughter pigs do not appear to have peaked. Despite the rally of the past 15 months, the price of Chinese 40-pound feeder pigs began June at the equivalent of $145, more than twice that of a year ago, according to official Chinese data. The price of fattened hogs, at about $143 per hundredweight, was up by some 35 per cent year on year.

Strong Chinese demand has helped support CME U.S. lean hog futures with the 2016 August summer month trading to new highs above $90/cwt on June 15, 2016. This June price was up by 10.7 per cent over the previous month on speculation that export volumes will continue to gain as China/Hong Kong expand their purchases of U.S. pork. USDA forecasts that China's import of U.S. pork will be up 7.4 per cent in the second half of 2016. Futures are starting to price in a very explosive export demand outlook, as they did in 2004 when October futures traded even higher than the summer seasonal highs.

The good news for hog futures is that the prospect of a continued shortfall in Chinese pork production implies strong import demand is likely to persist, at least through this year. If it's better than expected we could see a further reduction in domestic disappearance of one to two per cent. The overall trend also suggests deferred hog futures that normally fall in the winter may not fall as much on increased supplies.

A relatively low U.S. dollar is a tailwind for U.S. pork exports, making these exports globally competitive, vis-a-vis the European Union. In the United States., pork is competitively priced for the grilling season, while beef remains high versus other competing meats. This recent rally in hog futures could be demand driven as suggested by the high hog slaughter numbers, and any supply-side issues will only amplify the better-than-expected domestic and export demand.

U.S. pork exports will remain a critical driver for hog futures for the remainder of 2016 and 2017. The hog market is holding a much larger premium to the cash than normal and may have already priced in much stronger-than-normal China demand near-term. In mid-June, August hog futures rose to new contract highs — a convincing sign of bullish confidence regarding the potential for higher prices over the short term. The June heat wave in the United States could have dropped hog weights faster than expected and spark another rally higher. Tightening hog numbers are supporting cash hogs, as are a number of other indicators. Keep an eye on the cut-out, as it needs to continue rising to support higher hog futures. Cash is king! **BP**

Maurizio "Moe" Agostino is chief commodity strategist with Farms.com Risk Management. Abhinesh Gopal is a commodity research analyst with Farms.com Risk Management.

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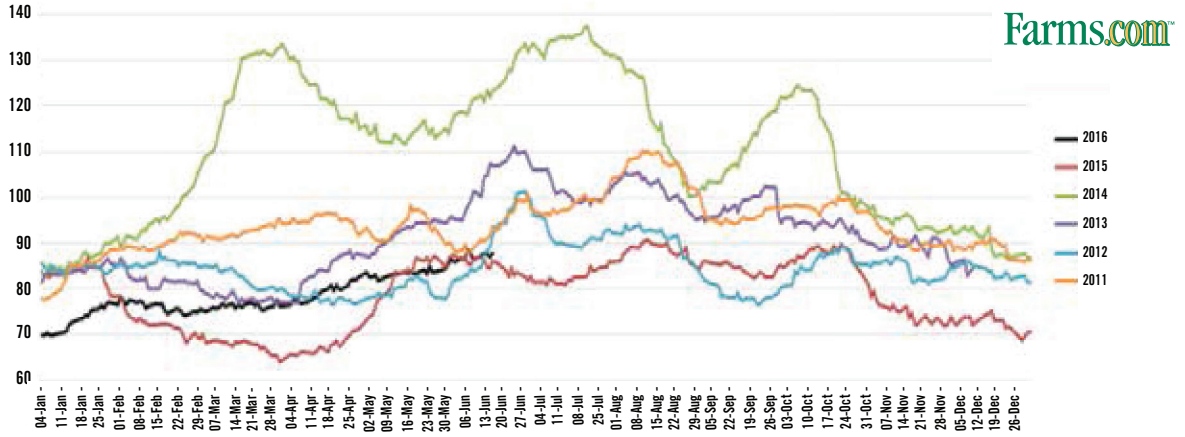
PORK DAILY CUT-OUT 2011-2016



Source: USDA

Focus on solutions rather than the problem

Why do some producers succeed where others do not? Set your goals, plan and take action one step at a time.

by RICHARD SMELSKI

Why do some producers keep succeeding?

One of my life-long interests was to study why some producers keep succeeding while others within the same commodity, county and resources keep struggling. What is it that allows some to be at the right place at the right time and others to strike out? We know it's not inheritance, mental aptitude, credit, government, prices, family, IQ, in-laws or plain luck, although each may be a temporary impediment or success.

Here's my take based on what so many producers and professionals shared with me — simple basic philosophies or guidelines that set them apart.

"Dwell on the solution not the problem" was a phrase best instilled by Denis Waitley, a psychologist working with top athletes and professionals. This simple phrase determines many attitudes in people. Pursue your objective one step, one detail or one bite at a time, until you "eat the whole elephant." A clear set of written goals lessens a problem (physically and mentally), but needs to be substantiated with a good data set and good follow-up statistical analysis. Many people continue to aim, aim, aim and never fire, but like Milly said in the 1954 movie, Seven Brides for Seven Brothers, "don't stand there, do something." Fifty per cent of job completion is getting started. Hang out with others that dwell on the solution, not the problem. Don't let your counterparts get you down.

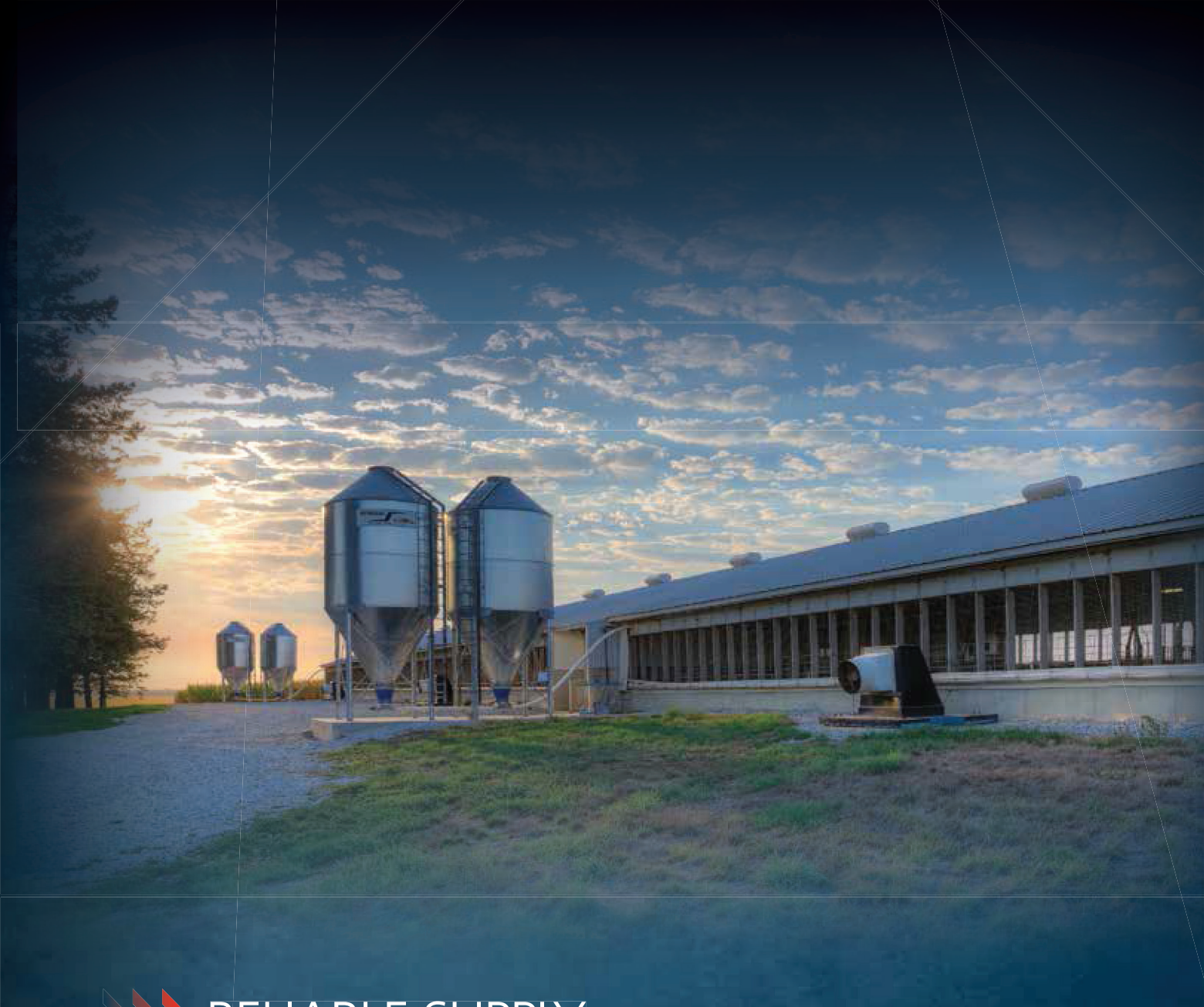
An African proverb says "If you want to go fast, go alone; if you want to go far, go together." The sum of the team will always be better than the sum of the same individuals working alone. Using a team-based approach to solving business problems enables you to capitalize on their strengths and minimize weaknesses. Recruiting professionals in their field for specific duties allows you to ensure the best process-improvement initiatives. Communication skills need to be continuously refined as most people do not listen with the intent to understand; they listen with the intent to reply. Throw the negative prognosticators off your bus! Working as a team allows you and your team members to take more risks. Conversely, sharing success as a team is a bonding experience. In a team-oriented environment, the riskiest idea often turns out to be the best idea. Teamwork allows employees the freedom to think outside the box. In short, as an old saying goes, "if you think you can do it alone, you are a fool."


"Throw the negative prognosticators off your bus!"

My wife tells me, "there is no such thing as no time — take it out of your vocabulary." I must admit defeat in this debate (although begrudgingly). Top-selling business author Brian Tracy says by knowing how to prioritize tasks, you can increase your productivity and output by 25 per cent or more from the first day that you begin working consistently from a list. The good news, according to Tracy, is that every minute spent planning saves as many as ten minutes in execution. It only takes about ten or twelve minutes for you to prioritize tasks by planning out your day and create a to-do list (thus I have no time to do flower beds). This small investment of time will save you at least two hours (100 to 120 minutes) in wasted time and diffused effort throughout the day. When you make out your to-do list the evening or the night before, your subconscious mind works on that list all night long, while you sleep.

This article is not meant to be your proverbial guidance but rather have you look at yourself and question what clichés drive you. **BP**

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



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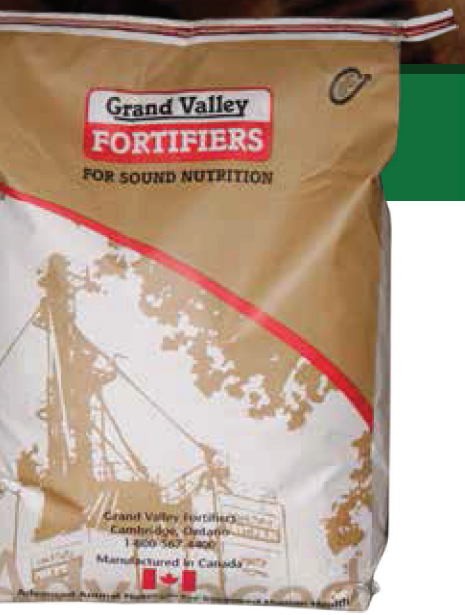

Bring on the benefits of BioSURE™

BioSURE™ is our new line of nursery feeds designed to provide the most aggressive growth rates in the industry today **without the use of any porcine origin ingredients**. BioSURE™ Nursery Feeds contain an improved combination of milk proteins, cooked cereals and Bionic® Oil Blend targeted to optimize post weaning growth and feed efficiency. Build a strong foundation for lifetime performance with BioSURE™ Nursery Feeds.

For more information contact your GVF Swine Specialist or GVF Monogastric Nutritionist by calling the number below.

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