

Better pork



August 2017 \$8.00

FARM FAMILY
TEAMWORK

20



EDUCATING CONSUMERS

Telling Our Story

6

PIG PHYSIOLOGY

Practical Applications

38

TAIL BITING

Finding Solutions

14

INCREASING CAPACITY

Pork Processing

36

Publications Mail Agreement No. 40037298

PIG PERSONALITIES

SALT POISONING

PED CHALLENGES

LOOKING AT BOAR LINES? START AT THE FRONT.



The **DNA Genetics Line 600 Duroc** is the most widely used terminal boar line in North America, surpassing all of the competition's mix-and-match lines. Customers know the difference: Rigorous, continuous genetic improvement that helps them move to the head of the line. And they're not moving back. See the light at dnaswinegenetics.com





DEAR READER: LETTERS FROM A FAMILY FARM

CHALLENGING MISINFORMATION

Even a brief encounter can leave a lasting memory.

About a year ago, my grandmother and I went to the grocery store. We each had a shopping list, so I headed to a different aisle to grab a few items.

When I returned a few moments later to meet up with **Grandma**, she was chatting with a middle-aged woman in the refrigerated section of the store.

This woman was trying to convince Grandma that she shouldn't buy the carton of eggs she had in her hands. (Grandma was holding a standard carton of eggs, which likely would have been produced by chickens housed in a conventional system.)

The younger woman was telling Grandma about the so-called "horrors" for hens in conventional housing systems – and the health risks associated with eating eggs from such a farm.

The woman was trying to convince Grandma to buy eggs that were produced in a free-range system. She said free-range eggs were healthier.

As consumers, of course, we all have the freedom to make our own decisions. But it floored me that someone would approach a stranger in the grocery store to try to convince her that her food choices were unacceptable.

I stepped in and reassured Grandma that the carton of eggs she wanted to purchase was produced by a Canadian farmer and that the eggs were safe.

I attempted to politely explain to the other woman the differences between conventional, free-run and free-range systems.

The experience stands out in my mind as an unsettling reminder of the disconnect between some consumers and producers.

This month, in our main feature, writer **Geoff Geddes** picks up on the theme of the public narrative surrounding agriculture. He explores efforts and initiatives underway to educate consumers about modern farm production practices.

I'd encourage you to share your efforts to teach others about agriculture. After all, our voices are strongest if we raise them together. **BP**

ANDREA M. GAL

EDITORIAL & LAYOUT

PUBLISHER & EDITORIAL DIRECTOR

Paul Nolan 888-248-4893, ext 202
paul.nolan@betterfarming.com

MANAGING EDITOR

Andrea Gal, PhD 888-248-4893, ext 201
andrea.gal@farms.com

STAFF WRITER

Jennifer Jackson 888-248-4893, ext 214
jennifer.jackson@farms.com

DESIGN & PRODUCTION

Shaun Clark, Tanya Myers, Greg Marlow

CONTRIBUTORS

Moe Agostino, Jim Algie, Norman Dunn, Geoff Geddes, Abhinesh Gopal, Ernest Sanford, Richard Smelski

CONTRIBUTING EDITOR

Franklin Carter

ADVERTISING SALES TEAM



Glenn Ruegg 888-248-4893, ext 916
glenn.ruegg@betterfarming.com



Norma Smith 866-519-4302, ext 265
norma.smith@farms.com



Jennifer Stewart 888-248-4893, ext 256
jennifer.stewart@betterfarming.com

OFFICE ADDRESS

Better Pork | Farms.com
52 Royal Rd., Unit A, Guelph, Ontario N1H 1G3
(519) 763-9660 | 1-888-248-4893 x281

COVER PHOTOS:

Martin Schwalbe photo and Maaik Campbell photo

Farms.com

SUBSCRIPTION INFORMATION

Mailed within Canada

\$22 for six issues over one year
(including \$2.53 HST)

\$40 for 12 issues over two years
(including \$4.60 HST)

Back issues \$12 (including \$1.38 HST)

To subscribe or update an address

Call: 1-888-248-4893 ext 281

Email: subscriptions@betterfarming.com

Mail to: 52 Royal Rd., Unit A, Guelph, ON N1H 1G3

Mailed to U.S. \$39.30 for six issues over one year

Internationally \$66 for six issues over one year

GST Registration #868959347RT0001

POSTMASTER:

Send address changes to AgMedia Inc.

52 Royal Rd., Unit A, Guelph, Ontario N1H 1G3

Publications Mail Registration No. 1156

Publications Mail Agreement No. 40037298

Email: subscriptions@betterfarming.com

Copyright © 2017 by Better Pork. All rights reserved. Reproduction of any article, photograph, artwork or design without written permission of the publisher is strictly forbidden. The publisher can assume no responsibility for unsolicited material.

Better Pork is published six times a year by AgMedia Inc.

Acceptance of advertising does not constitute endorsement of the advertiser, its products or services, nor does AgMedia make any claims or guarantees as to the accuracy or validity of advertisers' claims. The publisher shall have no liability for the unintentional omission of any scheduled advertising.

Printed in Canada. Printed with Soy Ink.



Ontario Pork photo

Ontario Pork takes its glassed-in display unit to special events so that children and families can get a first-hand look at pigs and piglets. For a related story on shaping the public narrative about agriculture, see page 6.



primeimages/iStock/Getty Images Plus photo

QUEBEC STREAMLINES HOG RISK MANAGEMENT

A financial boost for Quebec's long-standing hog price risk management system should simplify the process and improve producer participation, said **Julien Racicot, Les Éleveurs de porcs du Québec (ÉPQ)** economist.

Canadian and Québec government officials announced in early June a \$1.2 million grant for ÉPQ's 17-year-old **Service de gestion du risque du marché (SGRM)**. The system helps small producers lock in sale prices through **Chicago Mercantile Exchange (CME)** contracts.

New risk management funding will increase automation and simplify the system which has potential for use in other provinces, Racicot said in a phone interview from Longueuil.

"The main aim ... is ... making (SGRM) more user-friendly for producers," Racicot said. First introduced in 2000, the voluntary system relies on producers to calculate individual production costs and lock in target prices.

"What (SGRM) allows is to segment the whole contract that is traded at the CME so small producers have access to brokerage and hedging," he said.

"ÉPQ provides the platform and is the intermediary between the CME and the producer. The producer himself has to be responsible for the action of risk management that he engages in," Racicot said. **BP**

FINDING THE BEST FIT FOR THE BARN

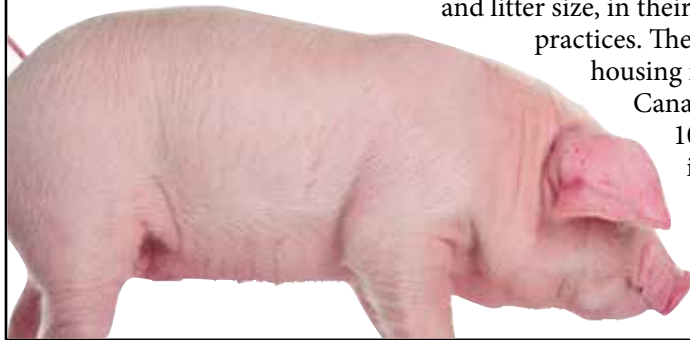
Which sow personalities suit open housing environments: the bossy gilts or those sniffing quietly at your coveralls? Perhaps it's a combination, says **Dr. Kristina Horback**, assistant professor at the **University of California, Davis**.

Many farmers have their own ideas already, Horback said in a phone interview. Some producers reject aggressive gilts as too hard to handle. Others see them as "great mothers" and preferred breeders. Horback expects her study about sow personality in open housing will help inform farmers' animal selections.

To date, Horback has identified consistent personalities among 36 growing gilts. She has begun studying a second cohort of 40. Over the next four years, she will follow the animals through four parities, tracking personality as well as production factors.

Under crate confinement techniques, farmers tended to emphasize mainly production traits, such as weight gain, milk production and litter size, in their selection practices.

The switch to open housing in Europe, Canada and at least 10 U.S. states, including California, puts a new light on other traits, she said. **BP**



Evgeniy1/iStock/Getty Images Plus photo

PRODUCERS CONTINUE TO CONFRONT PED

After months of no on-farm **Porcine Epidemic Diarrhea (PED)** positives in Western Canada, there were 51 reported cases in Manitoba between May 2 and July 7. The virus might have been forgotten by many but it's far from gone.

"PED has not left Canada," said **Dr. Egan Brockhoff**, a leading expert on PED and managing

partner of **Prairie Swine Health Services** in Red Deer, Alta.

"Hog and assembly sites in Canada have remained positive since the first infections in 2014. Although PED was eliminated from farms in Western Canada prior to this latest outbreak, it was never eliminated from assembly sites."

The pork industry has reacted with strong biosecurity reminders, biocontainment plans and notices to farmers neighbouring affected sites.

The transport industry is also under increased pressure to ensure proper cleaning, washing and disinfecting of trucks.

"The Manitoba situation is of great concern," **Dr. Brockhoff**

said to *Better Pork*.

"Positive sites produce a lot of virus that accumulates in dust and manure and is moved by transports, tractors and other fomites. Producers must consider that the world is covered in virus and do everything they can to keep it out of their barns." **BP**



Bent185/iStock/Getty Images Plus photo



Over 2.4 million hogs raised
without antibiotics.

Ask us how.

NATURES[®]
blend
PREMIXES & STARTERS

Over the past decade more than 30 family farms have successfully raised hogs from birth to market, without the use of antibiotics, ever. These farms fed Natures Blend[®] nursery, sow and grow/finish feeds and premixes which provide performance that rivals robust, conventional production programs.

Interested in growing RWA or Organic pork? Or simply desire to reduce feed medications? Give us a call or talk to your GVF Swine Specialist today.

1-877-625-4400
www.grandvalley.com

Grand Valley
FORTIFIERS
FOR SOUND NUTRITION

Advanced Animal Nutrition for Improved Human Health.

SHAPING AGRICULTURE



All About Pigs

Pig
Mobile

Check out...
a real pig farm @
www.virtualpork.ca



ONTARIO PORK

E'S PUBLIC NARRATIVE

Industry representatives stress the importance of sharing our stories so animal activists don't fill the void.

by GEOFF GEDDES



Aumsama/Stock/Getty Images Plus photo



“Farmers are doing a better job of telling their stories than they were five years ago,” Kelly Daynard says.



INVESTING IN YOUR SUCCESS

35682 Scotch Line
Port Stanley, Ontario
N5L 1J2
www.kaslobay.ca
@KaslobayAb
1-866-285-9405

As an authorized PIC Gene Transfer Affiliate, Kaslo Bay continues to align and invest in the resources needed to optimize your breeding program success. Regardless of herd size, marketing goals, or breeding program objectives, Kaslo Bay has the semen products to provide you with a competitive advantage in today’s marketplace.

Kaslo Bay is dedicated to investing resources to lower your cost of production and increasing your profitability with:

- **Exclusive PIC Genetic offering** – Delivering only world-class PIC genetics
- **Aggressive sire-line index management** – Creating more value per pig
- **Professional staffing and management** – Proficient, dedicated processing, delivery and service
- **Rigorous quality control and cutting-edge technologies** – 3rd party certified with consistent reliable performance
- **Proactive health management** – Stringent protocols and management



NEVER STOP IMPROVING

©PIC 2016 All Rights Reserved. ©PIC is a registered trademark.

Once upon a time in a magical land, pigs, cows and chickens freely roamed the earth while fairies delivered pork, beef and poultry to your door with nary an animal harmed.

For a small minority of consumers, that’s the only version of livestock agriculture that offers a happy ending. Most consumers, though, find the true story of Canadian farming to be a fascinating read – if they can find it.

As activists blur the picture with misinformation, many industry representatives feel producers must work harder and smarter to speak up and set the record straight while the public is still willing to listen. Given the stakes, inaction is simply not an option.

“As the public gets more and more removed from their farming ancestors, there’s an increasing disconnect between people and their food,” says Kelly Daynard, executive director at Farm & Food Care Ontario.

The disconnect creates a gap that the anti-farming movement is more than happy to fill.

“At the recent pig trial in Ontario (where Anita Krajnc was charged with mischief for giving water to pigs outside a slaughterhouse), the way activists were portraying farmers was horrendous and had no basis in reality.

“If we don’t tell our story, the people on the other side of the tape are very willing to tell it for us and we can’t let that happen,” Daynard says.

Echoing the urgency to spread the word about agriculture is Martin Bowman, director of production at

Verus Swine Management Services and a director with Alberta Pork.

“Misinformation can do a lot of damage if it goes unchallenged,” says Bowman. “I raise pigs because I want to work with animals and I care about them, so when others claim that we’re doing things we’re not and portray us as bad people, it’s our duty to stand up and correct them.”

Just as misinformation is concerning, a lack of knowledge also poses a risk.

And the survey says ...

“In a recent survey, 93 per cent of respondents said they know little or nothing about food and farming,” says Daynard, referring to the 2016 Canadian Centre for Food Integrity public trust study. “On the flip side, more than 60 per cent want information on where their food comes from. They just don’t know where to get it.”

That situation represents both a challenge and an opportunity for producers, and Daynard sees them

starting to rise to the occasion.

“Farmers are doing a better job of telling their stories than they were five years ago. I see more of them turning to social media, blogging, creating Facebook pages about their farms and going on Twitter. (Farmers are) realizing that they have a critical role to play here and can’t wait for others to control the narrative.”

While that’s a good start, there’s much more to do, according to Crystal Mackay, president of the Canadian Centre for Food Integrity.

Making the grade

“We’ve gone from a grade of C to B- in the last couple of years,” Mackay says, sharing her personal assessment of developments in agricultural advocacy. “It’s like hockey in that, just as there are thousands of pond

hockey games across the country, we have many people talking about farming to their friends and neighbours.”

Citing statistics from the 2016 study that show half of Canadians are unsure whether the food industry is headed in the right direction, Mackay says “getting to the NHL” and shifting that uncertainty will take a more coordinated effort.

“The need for transparency along the entire food supply chain is growing and is a real game changer. Right now we’re working with bestfoodfacts.org to give credible third parties like vets and researchers a chance to answer food questions from consumers.

The site reached one million people in the United States last year and we’re excited about bringing it to Canada.”



Kelly Daynard



Crystal Mackay

PANELTIM®
Pioneer in plastic sandwich panels

**Discover our new
thin panels in 1.4" & 0.8"**

**LIGHT
STRONG
CLEAN**

CW CARIS WELDING LTD.
DESIGN • BUILD • INSTALL

400 High St., Strathroy, ON
Steve Caris 519.871.5627
www.cariswelding.com

Perth Pork Products photo



Fred and Ingrid de Martines, pork producers in Perth County, Ont., run 1.5-hour farm tours for anyone who's interested. This group visited in October 2015.

Dare to discover

A prime example of transparency is the Bruce D. Campbell Farm & Food Discovery Centre at the University of Manitoba. The 10,000-square-foot (929-square-metre) building is filled with interactive exhibits that allow visitors and school groups to learn how their food is produced and even observe a live hog operation through four viewing windows.

“We have about 7,000 visitors a year, including school groups from

grades 4 to 11 and even corporate team-building sessions,” says manager Myrna Grahn.

“Our role is to give people information on basic farm production and the science behind why farmers do what they do.”

Next door in Ontario, Fred and Ingrid de Martines are doing their part to tell the producer's story. The couple runs Perth Pork Products Ltd., which raises and sells specialty pork products from rare and heritage

breed pigs to butcher shops, restaurants and consumers across the province.

They also run 1.5-hour farm tours for anyone who's interested.

“By and large, the reaction has been positive,” says Fred. “We get everyone from doctors to lawyers to politicians and people of all education levels. Anyone interested in broadening his/her view will come to the farm and (visitors) always tell us they learned a lot.”

HUSKY 50 Years
Husky Farm Equipment Ltd
 Committed To Quality You Can Depend On!

Also Available
 Lagoon Pumps
 10-12" Pipe Carts
 Truck Mounted Tanks
 Wireless Remote Controls

A Complete Line Of Liquid Manure Handling Equipment
 husky@huskyfarm.ca 519-846-5329 www.huskyfarm.ca

His favourite example is the woman who refused to enter the farm's viewing room at the end of the finishing barn because she was afraid of seeing something that would "haunt her for life."

"I talked and talked to her and finally she went inside. When she came out, she said, 'I'm so glad I did that,' which really made my day. Her whole attitude had been created by the media rather than first-hand experience."

Show and tell

If there's a lesson in what he's doing that can benefit pork producers and agriculture in general, de Martines says it's a simple but powerful one.

"As an industry, we need to tell

people exactly what we are doing and why. We can't sugarcoat it."

In Alberta, Bowman and his fellow members of the volunteer swine committee are heeding that advice.

"Every year we bring a sow and piglets to the Calgary Stampede where millions of people can come through and ask questions. We also have the Pig Science Centre at the University of Alberta.

"Any place like that where we can showcase the industry is a great chance to educate and inform (consumers)."

That attitude is one that Mackay hopes to instill in other producers.

"Farmers by nature are a modest bunch, so sometimes the activists can drown them out," says Mackay.

"I do a lot of workshops across Canada on how to speak up and tell your story. Farmers often think they don't have a story to tell and don't realize how interesting they are, but people want to hear their stories."

As evidence, Mackay pointed to an informational breakfast at an Ontario goat farm two years ago where 2,500 free tickets were snapped up in two weeks.

"I'm seeing that (initiative) happen all over the place now as many other farm breakfasts are being planned across the province.

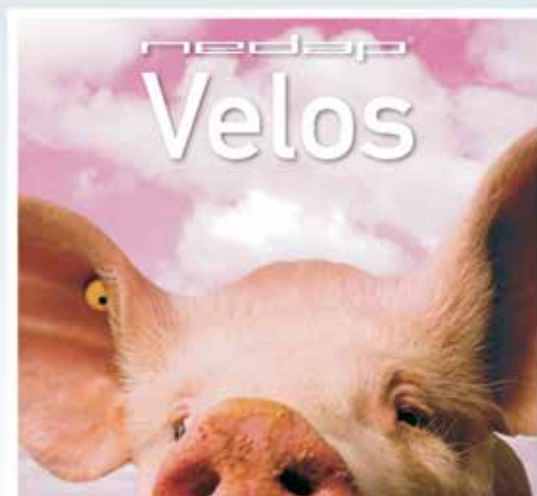


Martin Bowman



Melbourne Farm Automation Ltd. and the New Standard Group have joined forces in Ontario to market Nedap Electronic Sow Feeding.

Combining the many years' experience of the New Standard Group as well as their expertise in loose housing design & layout with the outstanding installation and service provided to you by Melbourne Farm Automation Ltd.



To date, the New Standard Group has supplied over 1,200 feeds stations in 3 countries. Those systems feed over 78,000 sows at 53 barns.

Both companies have experience in renovation/expansion planning as well as new barns.

Barn design services are offered with the full hog flow being taken into consideration as well as people movement.

Training for staff on how to use the system to its fullest potential is provided as well as after sales service and support.

To start the process of designing / updating your system or for more information on how the Nedap ESF products can work for you, contact:

**MELBOURNE FARM
AUTOMATION LTD**

Mark Want
(519) 289-5256
mark@mfasales.com

**NEW STANDARD
GROUP**

Kevin Kurbis
(204) 485-4600
kevin@newstandardag.com

Farm & Food Care Ontario photo



A group of Algonquin College culinary students toured a hog farm to learn how farmers produce pork.

Farmers are contacting schools and service clubs asking to go and make a presentation, and they never get turned down.”

Many industry representatives see that as a promising trend and Bowman hopes it's a lasting one.

“If we don't correct inaccuracies and give people the facts, it will

become harder and harder for us to continue farming the way we would like to,” says Bowman.

“Other groups will apply more pressure and assert more control over what we do. We must continue to be transparent and find ways of sharing our stories. If people can see what we do and be comfortable

with it, we don't have much to be afraid of?”

Once upon a time, producers speaking up to tell their stories through social media, farm tours and school presentations seemed like a fairy tale. But now, who knows? They may just write themselves a happy ending. **BP**



With **DEMETER**, you benefit from the expertise and innovative strength of our ten devoted swine veterinarians. Offering quality service in Quebec since more than ten years, we are pleased to be working with Ontario producers for over four years. Our Ontario vet team is looking forward to meet you.



MyHealthFile
Your complete health file on a secured and customized web platform, available 24/7 in real time.

R&D
Our team works on many R&D projects to improve health, management and pig nutrition.

LABORATORY
Exclusive access to our lab service including PCR, ELISA, and sequencing.

PHARMACY SERVICE
Wide selection of swine meds and essentials, shipped to your farm the next day.



Dr. Martin Bonneau Dr. Allister Scorgie Dr. Sylvain Messier Dr. Ryan Tenbergen

YOUR HERD HEALTH IS OUR BUSINESS!

Call us at 1-877-847-5411 or visit www.demetersv.com

THANK YOU OPC SPONSORS

Platinum

- Grand Valley Fortifiers

Gold Plus

- Genesis Inc.
- PIC Canada Ltd.
- Canarm AgSystems
- Swineweb.com
- Stubbe's Precast
- Purina
- Alliance Genetics Canada
- Demeter/SMI Shakespeare Mills Inc
- New Life Mills Limited/ Zantingh Direct Inc.

Gold

- Big Dutchman
- Boehringer Ingelheim (Canada) Ltd.
- DNA
- Kenpal Farm Products Inc.
- Ontario Pork
- Shur Gain / Nutreco Canada Inc.
- Merck Canada

Silver

- Zoetis
- Elanco Animal Health
- Farm Credit Canada
- Molesworth Farm Supply
- Ontario Swine Improvement Inc.
- Wallenstein Feed & Supply Ltd.
- Gestal Ontario

Bronze

- BSC Animal Nutrition Inc.
- BMO Bank of Montreal
- Christian Farmers Federation of ON
- DCL Animal Health and Nutrition
- Nuhn Industries Ltd.
- Karcher div of D&S Downham
- Masterfeeds/Daco
- Arva Appliances
- Alltech Canada Inc.



Taste the Best People's Choice Award



Best Indoor Display Purina®



Best Outdoor Display Luckhart Transport Ltd.





THE CO A CURL

**European producers
explore strategies to
need for piglet tail d**

by NORMAN DUNN

Administrators of projects throughout Europe encourage the rearing of hogs without tail docking. The result is pork that can be marketed under special “curly tail” welfare labels.

How can pork producers eliminate tail biting among feeding hogs? The most universally adopted solution has generally been tail docking. Removing, or docking, most of the tail at three or four days of age minimizes biting injuries to hog tails during the growing and feeding phases.

There’s a problem though: docking tails is illegal under European Union (EU) legislation. But this legislation has not stopped producers from carrying out the operation on their farms.

In Denmark, farmers dock the tails of 99 per cent of the approximately 28 million hogs produced in that country annually, according to the Danish Animal Welfare Society. For all of Europe, which ships 150 million hogs to slaughterhouses annually, the respective proportion of docked tails is “over 90 per cent,” according to presentations at the Pig Welfare Conference, held in Denmark in 2015.

An EU Directive from 2001 states that producers cannot routinely carry out docking unless there are



OST OF LY TAIL

and researchers
to overcome the
locking.



serious problems with tail biting on the farm in question. “Other management measures” to stop tail biting should be attempted first, according to this regulation. These measures include providing play objects or straw aimed at keeping hogs occupied and thus avoiding boredom and biting.

Statistics certainly indicate a

serious problem with tail biting in European operations where hogs get to keep their tails. For instance, one recent survey in northwest Germany observing 1,342 undocked hogs on 15 farms (824 hogs in one batch and 518 hogs recorded later) ended with every third hog losing up to one third of its tail by the time it reached slaughter weight. (See table below.)

At weaning (24 days), only 3 per cent of piglets in this trial showed signs of tail damage. Through the growing stage, however, 26.9 per cent of the first batch of hogs had damaged tails, as did 48.7 per cent of the second batch. By the end of the feeding stage at time of slaughter, 46.3 per cent of the first batch had damaged tails, as did 61.2 per cent of the second batch.

Of course, farmers and researchers are already applying solutions for reducing tail biting through the growing and feeding cycles. Participants in a number of international and regional projects all over Europe are undertaking this work.

The “Ringelschwanz” (curly tail) project run by the Central Association of German Swine Production (ZDS), or the EU-wide FareWellDock project involving scientists from eight countries with research started in 2013 supported by an EU Commission grant equivalent to

approximately C\$3.7 million, are two such examples.

The latter project is complete, explained Dr. Dale A. Sandercock, a member of Scotland’s Rural College (SRUC) Animal and Veterinary Science Research Group that has been involved since the development of the FareWellDock concept.

“But information related to tail docking and biting will continue through the FareWellDock network that has been established with a dedicated website for all information and updates: <http://farewelldock.eu>,” he said.

The group is developing management strategies that are mainly based on reducing stress for the hogs, Dr. Sandercock added. Research shows that any deterioration in a hog’s environment – and resultant stress – almost immediately leads to unrest, fighting and biting. Protocols being issued to farmers throughout Europe are aimed at optimising the hog’s environment so that producers can rear the animals more safely without tail docking. Some of the main recommendations include:

- Ensuring regular maintenance of ventilation and automatic feeding systems for trouble-free operation in growing and feeding barns.
- Fitting open water troughs instead of nipple drinkers.

Over 60 per cent tail damage

	End of growing period		End of feeding period	
	1	2	1	2
Batch	1	2	1	2
Hog numbers	824	518	824	518
Intact tail (%)	73.1	51.4	53.6	38.8
Blood on tail (%)	6.8	5.6	0.8	1.7
Loss of up to 1/3 tail (%)	17.5	24.9	35.1	32.4
Loss of up to 2/3 tail (%)	2.4	17.4	6.2	23.2
Loss of over 2/3 tail (%)	0.2	0.8	2.9	2.9
Total loss of tail (%)	-	-	1.3	1.0

Source: North-Rhine Westphalia Chamber of Agriculture

TAILDOCKING

- Supplying straw or similar natural and degradable pen enrichment material.
- Offering a variety of “playthings” – such as chains, balls and plastic objects – which should be seen as an addition to natural rooting materials, to keep hogs occupied.
- Following a policy of intense monitoring of hogs, especially during “danger times” when hogs are particularly prone to fighting and biting each other, e.g. when feeding systems break down or during disease outbreaks.
- Training staff to pay special attention to pens with suddenly increased levels of activity, tail chewing, tucked-in tails and/or decreased visits to automatic feeders.
- Immediately removing hogs with bitten tails or other injuries from their pens and rehousing in

“hospital” pens.

- Having an “emergency case” always within easy reach of the stock manager and filled with a selection of alternative playthings and tasty feed samples that can be scattered in any pen where fighting breaks out.

Researchers with the German “curly tail” project tried, tested and now recommend the latter strategy. The case contents are proving good for subduing aggression and biting in pens. The feed portions include small packages of tasty fodder, including sugar beet pulp or lucerne meal.

Just how effective are the other recommended strategies? A closer look at the German ZDS survey highlights that not all farms suffer from dramatic tail biting injuries. A few farms return very good results with hog injuries well below the average.

For instance, one of the participating farms managed to deliver 95 per cent of its undocked hogs to the slaughterhouse without any tail damages. And an average of over 70 per cent of hogs shipped from eight other farms had no damage to their tails.

Hog management appears to be different on such farms. Researchers feel that it’s no coincidence these producers apply many of the recommendations listed above.

A few European countries firmly enforce legislation against tail docking: Sweden and Finland within the EU, and non-member countries Norway and Switzerland. The researchers involved in the pan-European “FareWellDock” consortium point out that the strategies successfully used in these countries have helped develop a system for the rest of Europe.

“Hogs have a strong behavioural need to perform exploratory behaviour, spending most of their movement time actively sniffing, rooting and chewing. A barren environment means this behaviour is redirected towards other hogs, potentially leading to injuries including tail biting,” the researchers said.

One of the major risk factors for

Curtiss Littlejohn
Swine Products Manager

SowChoice Systems
by Cassidian

Our job is to keep you **SUCCESSFUL**

The SowChoice Systems™ ESF delivers the best features of any sow feeder available, optimized for a humane environment. Built and serviced for extreme reliability, it features all 304 stainless steel construction. Our ESF has environmentally sealed electronic controls and a retractable feed bowl for faster throughput. Put Canarm’s 80 years of livestock experience to work for you. Ask our expert Curtiss Littlejohn why successful swine producers love our ESF.

Visit www.sowchoicesystems.com or call 1-800-260-5314 for more information.





Although officially illegal in the European Union, producers still carry out regular tail docking with over 90 per cent of the 150 million hogs slaughtered annually in Europe.

tail biting, the FareWellDock scientists say, is therefore lack of proper enrichment material (straw and playthings). Swedish and Finnish producers, for example, add a handful or two of straw to the pens for each hog. Where farmers offer up to 14 ounces of straw per hog each day, incidence of tail injuries is progressively reduced and hog growth rates increase.

A long-term survey of pig farms under the “Real Welfare” scheme in Britain linked to a premium animal welfare retail label “The Red Tractor” compared the incidence of pen enrichment strategies in 2013 and then again in 2016.

Over this timespan, the inspectors involved reported: “a significant increase in pens with undocked hogs where straw and playthings such as chains and plastic objects were offered.” By 2016, inspectors reported straw in 67 per cent of all the surveyed pens.



MEET OUR QUALITY EXPERTS

**Mary-Anne Bach,
Quality Control Manager**

“Carlo Genetics has been a respected A.I. supplier to the swine genetics industry for 30 years,” said **Mary-Anne Bach, Quality Control Manager**, “and our commitment to technology, bio-security, and superior quality standards keeps us leaders in the A.I. industry.”

Carlo Genetics uses cutting edge tools to measure sperm cells on all semen produced. The Nucleo Counter SP-100 provides precise and accurate measurement of semen quality by determining cell viability for the best reproduction possible.

Carlo Genetics

Leaders in Science for Swine Genetics

www.carlogenetics.com

Toll-free: 1-866-355-4012



Providing pigs with enrichment materials can help to reduce tail biting.

**Swine Production
Software Market
Leader**



**is looking for Agents
to represent its
products in Canada.**

Email: info@PigCHAMP.com

Researchers exploring and developing systems for hog production without tail docking have come across two important factors that appear to trigger tail biting and other aggressive behaviour.

One factor is poor health amongst the animals. For instance, in one farm where mycotoxins appeared in the feed, the hogs immediately started tail biting. Another factor is an upset in daily routine.

On one farm, the automatic liquid feeding system broke down. The undocked hogs started fighting and tail biting almost immediately after the feed supply stopped.

But European hog producers will have to ponder a crucial factor before deciding to give up docking their piglets' tails. Who is going to pay for the extra costs involved?

When all costs are considered, the extra materials and management involved in protecting undocked hogs certainly don't come cheap.

In Germany, Soest Technical University looked at the inputs involved for 13 farms taking part in the "curly tail" project. Producers' average extra expense in caring for undocked hogs in the growing and feeding barns worked out at a minimum equivalent to approximately C\$37.46 per head. (This cost included capital investments that might be usable in subsequent years, such as the new water troughs and playthings.)

But producers' biggest cost (over 60 per cent) was extra labour for observation, moving injured hogs, collecting and cleaning playthings, scattering straw, etc.



Producers' biggest cost (over 60 per cent) was extra labour for observation, moving injured hogs, collecting and cleaning playthings, scattering straw, etc.

Sometimes, extra returns are available. For example, one supermarket chain in Germany, REWE, has stepped in to help producers make the transition by offering contracts to 60 selected farmers for the supply of meat from undocked hogs. REWE is a co-operative retailer encompassing 15,000 retail grocery markets.

In the pilot REWE "Pork from curly tailed hogs" project, some retail outlets in the Westphalia region of Germany started selling the special, curly tail pork. The co-op is paying the equivalent of a C\$27 bonus per hog, plus a one-off incentive of approximately \$750 to selected farms to help with capital investments for changing over to a non-docking system.

Producers will need financial support, like that from REWE, to achieve the industry aim of a general halt to tail docking throughout Europe. **BP**

Jefocare

Health and Prevention

At Jefo, we understand the *global pressure* moving towards *responsible use* of antibiotics in swine production.

We have the *solutions* to help you through the transition.



Jefo

VITAMINS
MINERALS
ENZYMES
PROTECTED
ACIDIFIERS &
ESSENTIAL OILS
GRANULAR
AMINO ACIDS

by
JENNIFER JACKSON

INSTILLING AN APPRECIATION FOR AG

This farming couple shares their love for agriculture and the little things in life with their children.

Maaike Campbell and her husband Lyle share complementary roles in their swine and cash crop operation in Lambton County. Maaike manages the swine component of the farm

while Lyle manages the cash crop and mechanical components – both individuals have separate duties but are reliant on one another, according to Maaike.

There was a point, however, when Maaike did not believe a future in the swine barn was for her. She went to the University of Guelph, pursuing a bachelor's degree in commerce with a

Julie Shute-Lewis, Making Memories photo



Campbell family

major in agricultural business. In 2011, a year before Maaike graduated, her father began working with sows.

“I had worked in a sow barn for a summer job before and completely hated it,” she says. “My dad was completely new to the industry and he asked if I would come help him out for a bit.

“A few weeks turned into a few months and, eventually, turned into a few years.”

While working with her father, Maaike married Lyle and had two of her four children. In 2012, the couple bought her parents’ sow operation and began to run the barn on their own, in combination with their existing cash crop farm.

Since they purchased the operation, the couple has grown the farm to the 1,700 sow, farrow to wean operation that it is today.

“The reason why my husband and I have done so well is that we really work as a team,” says Maaike. “I could not run the sow operation without him and he could not run his cash crop operation without me.

“Teamwork is key – you have your good days and your bad days but, at the end of the day, you’re (still) a team.”

Maaike will let Lyle know of any mechanical issues in the barn, or will simply ask Lyle to walk through and let her know if there is anything she is missing.

“Sometimes at night we will get a babysitter and, instead of going out to dinner, we will just go to the barn and spend a couple hours walking through there, discuss-

ing life plans and looking at pigs,” Maaike says, laughing. “In three weeks (from the time of the interview), we will have been married for ten years.”

Today, the Campbells have four children, who range in age from two to eight. The couple hopes to raise their children with the same passion for agriculture that Maaike and Lyle share.

“We also want to show our girls that there’s an equal opportunity in the agriculture industry. When I am not in the barn, the other person in charge is a woman as well,” says Maaike.

“As far as my girls are concerned, they think all women run sow barns – if someone told them otherwise, that only men run sow barns, they would (say) no (way).”

Describe your role on your farm operation?

(I am an) owner and operator.

How many people does your farm employ?

Five full time, not including family members. On top of the five (employees), there is also my husband and I.

Hours you work per week?

It ranges between 50 and 80 (hours), depending on whether we are in planting or harvesting season.

How many emails do you receive per day?

We (my husband and I) are guessing between 40 and 50.

Nedap Electronic Sow Feeding

The Benefits:

- Sows in top condition, more piglets
- Less feed wastage
- It's simple to apply feed strategies
- Notification when animals don't eat
- Substantial noise reduction, calm and relaxed sows
- Automatic detection, marking and separation of sows based on heat



**Your Nedap System
professionally installed and maintained by:**



400 High St., Strathroy, ON
Steve Caris 519.871.5627
www.cariswelding.com

Hours a day on a cellphone?

Actually talking, maybe only 30 minutes.

What about your smartphone?

I use my smartphone for the Internet, so (I spend) about an hour and a half (on it) between emails, the Internet and apps.

Email or text?

I prefer text because it's quicker but, sometimes, you need the formality of an email.

Any favourite apps?

Email, weather and Twitter – I love Twitter.

How often do you travel?

We figure (we travel) a few times a year. We don't travel as much because the kids are still small but we do (attend) a few hog events every year.

Where did you last travel to?

The Banff Pork Seminar (in) January – we go every year.



ImagineGolf/istock/Getty Images Plus photo

Banff Pork Seminar 2017 was held at the Banff Springs Hotel.

Hours in the office per day?

We (my husband and I) figure about two hours per day.

What do you like best about farming?

Being able to show my kids (how) to appreciate plants and animals,

and the way to interact with the environment.

What do you like least?

Since we're dealing with weather and livestock, your plans sometimes need to be changed when you really don't want them to. So (our least favourite part of farming is) the unpredictability of it.

What is the single most important lesson you've learned?

Don't be afraid to pursue your dreams but, at the same time, be open to new ideas and challenges.

What's your guiding management principle?

(My husband and I) had a big discussion about this and we both agree (our principle is to) 'treat everything and everybody the same way that (you) would want to be treated.'

What's your top tip about farm succession?

Communication, communication, communication – I don't think you can ever talk too much.

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

My husband sits on the sustainability advisory committee for Ontario Pork. I am an alternate on the Lambton

Bringing the Best in Swine Nutrition and Management

Stuart Boshell 519-949-0149
 Ben Dekker 519-330-9070
 Peter Vingerhoeds 519-272-9041
1-800-268-7769

BSC
 Animal Nutrition Inc.
 Professional Nutrition & Management Services

LEAN | EFFICIENT | PROVEN

Experience **Everything** in **Agriculture**



 Presented by
Farm Credit Canada



SEPTEMBER 12, 13 & 14, 2017 CANADA'S OUTDOOR PARK
WOODSTOCK, ONTARIO



NEW DEMOS!
TILLAGE (CULTIVATORS)
FORAGE BALING

TELEHANDLER RIDE 'N' DRIVE

Be a part of the biggest event in agriculture!

Join more than **40,000** farmers to experience the latest in agricultural technology and innovation at the **24th annual Canada's Outdoor Farm Show**.

Over **750 exhibits** will showcase the latest products and services through interactive displays and live demonstrations of machinery, crops, livestock and much more.

 www.OutdoorFarmShow.com

 info@outdoorfarmshow.com

 1-800-563-5441

 @outdoorfarmshow

 Canada's Outdoor Farm Show

 canadasoutdoorfarmshow

County Pork Producers Board. I'm the Lambton County Pork Producer's Ag in the Classroom representative. I'm a director on the Watford Skating Club. I coach a group of six- and seven-year-old (kids) for soccer. I am on the Parent Council for our kids' school and I am a risk management review board member with Agricorp.

What are your hobbies or recreational activities?

Spending time with kids and our family is a big one.

We have some hobby sheep and cows ... for the kids to stay entertained. (This work is) kind of like our hobby and recreational activity.

Besides that, I do long distance running – I am training for my first full marathon – and I really like cooking.

What does your family think of farming?

For us, it's more of a question: is there anything else?



Maaike Campbell



70016 Hern Line Woodham, Ontario N0K 2A0
PH 519-229-6882
FAX 519-229-6883
 Email: info@deweteringagri.com
www.deweteringagri.com

What we like to do on Sundays is to go on crop tours and actually walk fields with the kids. We show them the bugs that are in the field, the crops (that are) growing and how to feed the calves and sheep. We are teaching them to appreciate the little things – essentially, we are just living the dream.

What's your most important goal?

To be content and to raise our kids in agriculture.

How do you define success?

To work hard yet to have the flexibility to watch our kids grow in agriculture.

What was the last piece of shop equipment you bought?

Cable wire and plasma tips – we really had to think about that one.

Is your farm vehicle messy or neat?

Lyle and I laughed about this one – (our vehicle is) as neat as it's going to get with four kids.

What are three items that are on top of your desk?

A mouse, a printer and a stapler.

What's the best time of day?

I'm a morning person so 5:00 a.m. because no one is awake yet. So, it gives me time to think.

What was your most memorable crop/production year?

In 2012, we had record prices combined with record yields and production. Between all of this, (my husband and I) were able to start farming independently. It was a pretty big year in our books! **BP**



Yes!
XTRACT® works

XTRACT®

The XTRACT® range of feed additives consists of standardized combinations of bioactive substances that naturally occur in aromatic plants and spices. These phytonutrients are standardized, stabilized and protected by our patented Iso-Fusion Technology®. Scientifically validated, XTRACT® 6930 and XTRACT® Nature solutions target every step of the pig production cycle ensuring maximum production potential, reliability and return on investment.



www.pancosma.com



Pancosma
makes sense



by
**S. ERNEST
SANFORD**

RECOGNIZING SIGNS OF SALT POISONING

Monitor your herd closely in cases of accidental water supply disruptions.

Salt poisoning, more commonly known as water deprivation, occurs sporadically in pigs. In theory, excessive dietary salt can precipitate episodes of acute salt poisoning. This situation, however, is unlikely to occur if the pigs have a constant and adequate supply of drinking water.

More commonly, this type of poisoning results from an accident or an oversight leading to a disruption in water supply to a group – whether it be a pen, a room or an entire barn – of pigs. Salt poisoning is almost always related to the inadequate availability of water.

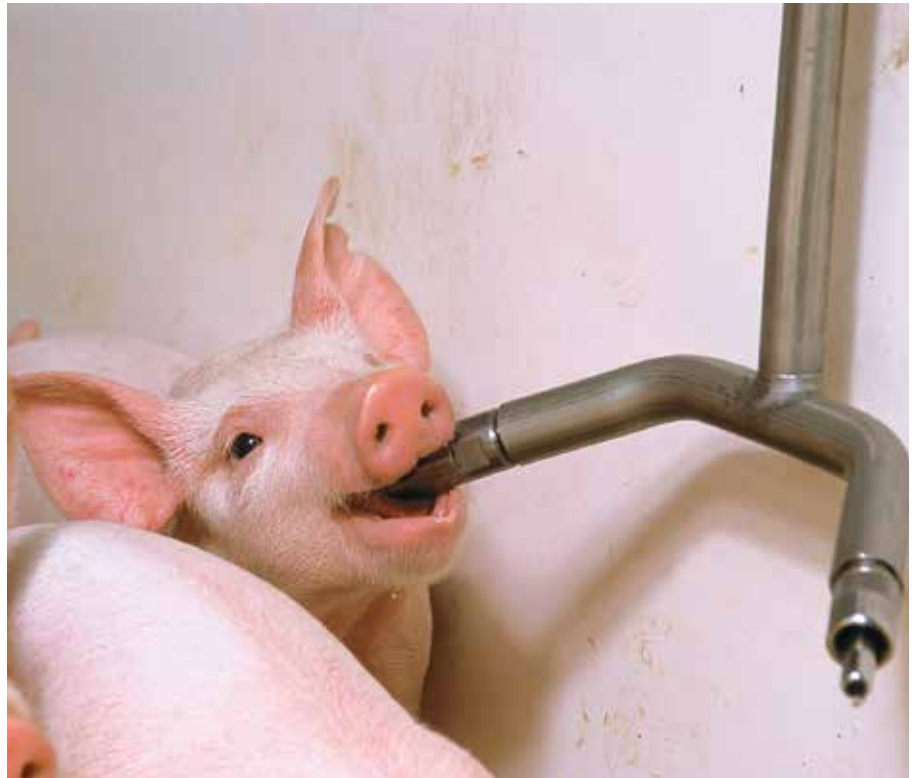
This type of poisoning can occur after pigs' access to water has been interrupted for only a few hours but they do not usually show clinical signs until at least 24 hours after the disruption.

Clinical signs

Thirst and constipation may be the initial clinical signs of salt poisoning. These signs are followed by central nervous system (CNS) signs, which are characterized by convulsions in which pigs arch their heads backwards unnaturally. Pigs appear to be blind and deaf. The condition often becomes more prominent if water is reintroduced in an unlimited quantity. Some pigs will collapse and start paddling before dying.

Diagnosis

Producers and their veterinarians can diagnose salt poisoning by confirming that the pigs experienced water deprivation. Necropsy (examination of the body after death) may reveal gastritis, constipation or enteritis. Histological lesions (only visible under a microscope) of severe eosinophilic meningitis, and cuffing of meningeal and cerebral blood vessels with eosinophils are also confirmatory of this type of poisoning.



Treatment

Producers must restore the water supply gradually. Providing the afflicted pigs with sudden and abundant access to water will exacerbate the condition. More pigs in the population that had not originally exhibited clinical signs will develop signs of salt poisoning.

Hiring a lab to conduct a feed analysis of sodium levels is not usually informative, since salt poisoning will occur in the presence of normal sodium levels in the feed if the water supply is compromised.

Summary

Salt poisoning occurs sporadically in pigs. Although high levels of salt in the pig's diet can theoretically cause salt poisoning, the problem is unlikely to occur if the pig has access to an abundant supply of water.

Rather, salt poisoning is almost always related to inadequate availability of water. Interruption in

the pigs' access to water for just a few hours can result in salt poisoning, but usually pigs take more than 24 hours to precipitate clinical signs.

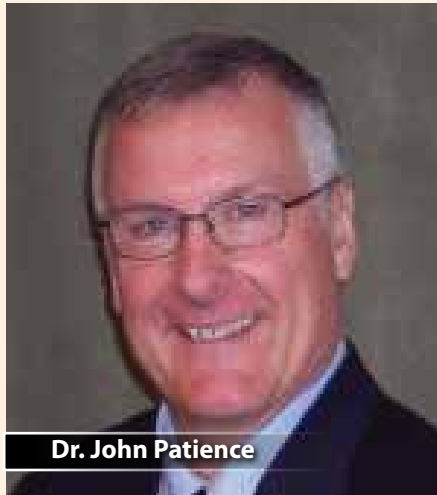
Clinical signs of salt poisoning consist of thirst followed by convulsions, and signs of blindness and deafness. Collapse and paddling occur prior to death.

Producers and their vets can usually establish a diagnosis by reviewing recent interruptions in pigs' water supply and observing clinical signs. Staff can correct the problem by re-establishing the water supply but they must reintroduce water gradually. Providing the pigs with too much water exacerbates the problem and leads to even more pigs in the population becoming clinically affected. **BP**

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

University of Guelph Swine Research Day

On May 17, 2017 the University of Guelph held its second annual Swine Research Day. The meeting was well attended and included two keynote speakers, and presentations by faculty and graduate students. The following is a summary of one of the keynote presentations, by Dr. John Patience from Iowa State University.



Dr. John Patience

The Evolution of Diet Formulation: A Look Into the Future

Dr. Patience began his talk by paying tribute to the late Dr. Kees de Lange. Dr. Patience spoke about many of Kees' accomplishments over the years, and how he contributed to our current understanding of swine nutrition. Dr. Patience focused on the evolution of swine nutrition over the last 50 years, and where we might be heading in the future.

According to Dr. Patience, sci-

ence has provided a much greater understanding of nutrition, biochemistry and physiology over the years. At the same time, the pig industry has grown more sophisticated in how ingredients are purchased and how diets are formulated.

However, these advances do not always meet up with the more practical demands of mill throughput on the feed manufacturing side of the equation. Feed mill managers tend to prefer large batch runs, instead of making diets specific to each individual client.

The more we focus on reducing manufacturing and transportation costs from a throughput perspective, the more it limits our ability to implement the best nutritional programs. The industry will need to work to balance manufacturing and trucking throughput with high-quality nutrition as we continue to learn more about feeding pigs.

Dr. Patience also discussed some of the other scientific challenges that exist when it comes to feeding pigs to the best of our ability. One of these challenges relates to how we express nutrient requirements. Individual nutritionists may express nutrient requirements differently, and each method can have its merits, but also its drawbacks.

An example of this is how we express amino acid requirements for the pig. Each amino acid can

be expressed on a concentration basis (e.g. %, g/kg), on a daily intake basis (e.g. g/day), per unit of protein accretion basis (e.g. g/mg protein grain) or as a ratio to energy (e.g. g/Mcal NE). Some systems are better than others.

Variation was another topic covered by Dr. Patience. He touched on three types of variation. First is the biological variation of plants used for feed. This is a big challenge for nutritionists, because different varieties of plant ingredients can have significantly different nutritional characteristics. Additionally, there can be variation season to season and batch to batch (especially in the case of by-products such as DDGS). The energy content in barley can vary by 15%, wheat by 9% and corn by 8%. Recent advancements in the application of NIR technology can aid nutritionists, allowing them to obtain nutrient composition data for each batch of a grain they are using in their formulations.

The second type of variation addressed is the biological variation in the pig itself, which is often not addressed at all in current feed formulations. In general, nutritionists use the average nutrient requirements and apply those to a large population of pigs. Requirements can vary on a pig-by-pig basis, and also from farm to farm. Health status, season and genetics can all play a role in this variation. Feed intake alone can vary by over 30% from one farm to another. In the coming years we will see more research to determine the needs

of individual pigs as technology advances towards precision feeding for sows and finisher pigs.

The final variation that Dr. Patience addressed is that of market conditions. The spread between market prices and feed costs are constantly changing. Feeding programs that maximize net income when feed costs are high and market prices are low may not be optimal when feed costs are low and market prices high. Changing a feeding program based on market conditions is very difficult, but tools such as forward contracting feed and pig prices can help.

Another big area that is changing as we learn more about feeding pigs is feeding them not only to meet nutrient requirements, but also to meet the needs of the microbiome present in the gastrointestinal tract. Research continues to tell us that the non-nutritive characteristics of a diet can reduce or increase a pig's susceptibility to certain pathogens. As we see greater pressure on the use of antimicrobial drugs in animal agriculture, developing feeding programs to ensure a healthy gut will be very important.

Dr. Patience wrote an excellent article to go along with his presentation. I would encourage anyone interested in the evolution of swine nutrition and Dr. Patience's predictions on where we are going over coming years to read it in full. Proceedings from this meeting, along with archived proceedings from the Mike Wilson Day and Centralia Swine Research Update, can be found online at <https://www.uoguelph.ca/osrn/swine-research-day/proceedings-archives>.

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

New Food Safety and Traceability online courses!

Give your company a competitive edge – take free eLearning courses to learn more about industry best practices and to be more competitive in the marketplace!

Access the new Food Safety and Traceability eLearning courses online on the Agriculture and Food Education in Ontario online learning system through the University of Guelph, Ridgetown Campus.

The new Traceability eLearning courses show how good practices can:

- maximize productivity, improve business efficiency, reduce costs and improve business processes
- be used to increase competitive advantage by accessing new markets
- improve supply chain management

The new Food Safety eLearning courses will help you to:

- identify food safety hazards that can occur in your operation
- understand best practices and develop programs to control these hazards
- decrease the likelihood of food safety hazards that can lead to a foodborne illness outbreak or product recall

Visit the University of Guelph website to register for a FREE account. Then simply log in and begin learning – wherever and whenever is convenient for you! Accessible versions of the courses are available.

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

Do you prefer classroom-based learning? Food Safety and Traceabil-

ity courses and workshops are still offered by the Ontario Soil and Crop Improvement Association (OSCIA). Visit their website for the dates and locations of upcoming in-person opportunities.

Online course development was funded through *Growing Forward 2*, a federal-provincial-territorial initiative that encourages innovation, competitiveness and market development in Canada's agri-food and agri-products sector.

Compensatory Growth: A Potential Cost Saving Feeding Strategy

With rising costs of oil, grains, and supplements, feed inputs are often one of the greatest costs of pork production. A slight reduction of feed costs by \$1 represents about a \$20,000,000 per year savings for the Canadian pork industry. Alternative feeding strategies, such as utilizing compensatory growth, may be an effective means to achieve these savings.

Compensatory growth is the ability of an animal to increase its growth, following a nutrient restriction (protein, energy), beyond that of unrestricted animals. We can break compensatory growth into two phases:

Restriction Phase: Pigs are fed a nutrient deficient diet for a temporary period of time. These pigs often have a poorer feed efficiency and are smaller relative to unrestricted pigs.

Recovery Phase: Following the nutrient restriction, pigs are fed a diet adequate to meet their needs. These pigs often have a better feed efficiency, and an increased growth rate relative to unrestricted pigs. This increased growth rate may permit these pigs to

achieve the same body weight in the same amount of time as the unrestricted pigs.

Commonly, a reduction in diet protein (amino acid) content has been used to induce a compensatory growth feeding response. This nutrient is of significance as it contributes to more than 25% of feed costs. A reduction in diet protein content is especially important to consider during the nursery phase, when protein sources are often highly expensive relative to later stages. By reducing protein intake during the nursery phase, and increasing protein intake in later stages of growth when compensatory growth occurs and feed protein is less expensive, we can potentially reduce feed costs.

In an experiment I recently conducted on compensatory growth, it was found that by reducing the lysine (amino acid) diet content (and therefore protein) by 40% of the pigs daily requirements, feed costs could be reduced by \$0.50/pig. In this experiment, three-week-old weaned pigs (barrows and gilts) were fed either a diet sufficient to meet all their nutritional requirements or a diet limited in lysine for a period of three weeks (restriction phase). Following this, all pigs were fed a diet sufficient to meet all their nutritional requirements for a period of six weeks (recovery phase).

At the end of the three week period, pigs which were fed a diet limited in lysine had reduced growth performance compared to pigs which were fed diets not limited in lysine (Table 1). In particular, pigs fed a low lysine diet were 2 kg smaller than pigs who were not limited.

However, when fed a diet that was no longer limiting, these pigs achieved the same body weight in the same amount of time as the pigs which previously were fed a diet which was not limiting (Table 1). This can be attributed to the pigs' ability to achieve a growth rate greater than those pigs that previously were not limit fed. In other words, these pigs were able to gain back during the recovery phase the growth they lost in the restriction phase.

With all this in mind, further research is required to illustrate the benefits and predictability of compensatory growth before it can be adopted, with confidence, in commercial pork production. In particular, further research is required to determine the effects of a disease challenge on the outcome of compensatory growth. Previous research in our lab has shown that pigs fed low quality protein diets are more susceptible to a disease challenge, and may not achieve compensatory growth.

Nonetheless, with further research, feeding low protein diets and capitalizing on compensatory growth may be an effective means to reduce feed costs and increase the competitiveness of the Ontario swine industry on the world scale.

*Adam Totafurno, MSc Student
519-824-4120 ext. 58353
atotafur@uoguelph.ca*

Body Condition Scoring Sows

Assessing sow body condition is an important part of sow management. The reproductive capabilities of a sow are closely tied to her body condition.

If a sow is over-conditioned, this may result in trouble farrowing, less feed consumption during lactation, reduced milk production, lighter litters weaned, increased body fat loss and reduced rebreeding rates. If a sow is under-conditioned, however, this may lead to failure to return to service or, if she is bred, failure to maintain a pregnancy.

It is possible to reduce return-to-service intervals and increase sow longevity by monitoring and maintaining ideal sow body condition. Sows will gain and lose body condition throughout their gestation and lactation

Table 1: Growth performance of pigs during restriction and recovery phases

	Restriction Phase (3 Weeks)				Recovery Phase (6 Weeks)			
	BW ¹ (kg)	BWG ² (g/day)	FI ³ (kg/day)	FCR ⁴ (G:F)	BW ¹ (kg)	BWG ² (g/day)	FI ³ (kg/day)	FCR ⁴ (G:F)
Adequate lysine diet	15.5	411	0.51	0.81	50.8	400	1.67	0.53
Low lysine diet	13.6	320	0.52	0.63	50.1	892	1.63	0.57

¹BW= Body weight ²BWG= Body weight gain ³FI= Feed intake ⁴FCR= Feed conversion ratio

cycles, but the aim is to reduce large swings, and keep their body condition as consistent as possible.

The most accurate way to measure body condition is to use ultrasound; however this may not be practical on farm. Body condition can be evaluated using finger and hand pressure on various parts of the sow where fat is generally deposited. These areas include: ribs, spine, and hip bones. It is important to evaluate all three of these areas when body condition scoring as all animals deposit fat differently.

Sows are scored on a 5-point scale with 1 being emaciated (very thin) and 5 being obese. Below is a visual representation along with a written explanation of sows given body condition scores from 1 to 5. A sow's body condition will fluctuate with her reproductive cycle. Because of this, it is important to obtain multiple body condition scores throughout each reproductive cycle. The National Farm Animal Care Council Code of Practice provides guidelines for target body condition scores at critical points in the reproductive cycle (Table 2). Consultation with a qualified advisor such as a

swine nutritionist or veterinarian is needed to set the target scores of individual herds according to their unique feed, genetic lines and management strategies.

References:

Code of Practice for the Care and Handling of Pigs. National Farm Animal Care Council. 2014.
Johnson, Stalder, Karriker. Sow Condition Scoring Guidelines. Iowa State University. 2006.

*Megan Kitts, OMAFRA Summer Livestock Assistant – Swine
megan.kitts@ontario.ca*

Figure 1: Body condition score of sows on a 5-point scale (Code of Practice for the Care and Handling of Pigs, 2014).

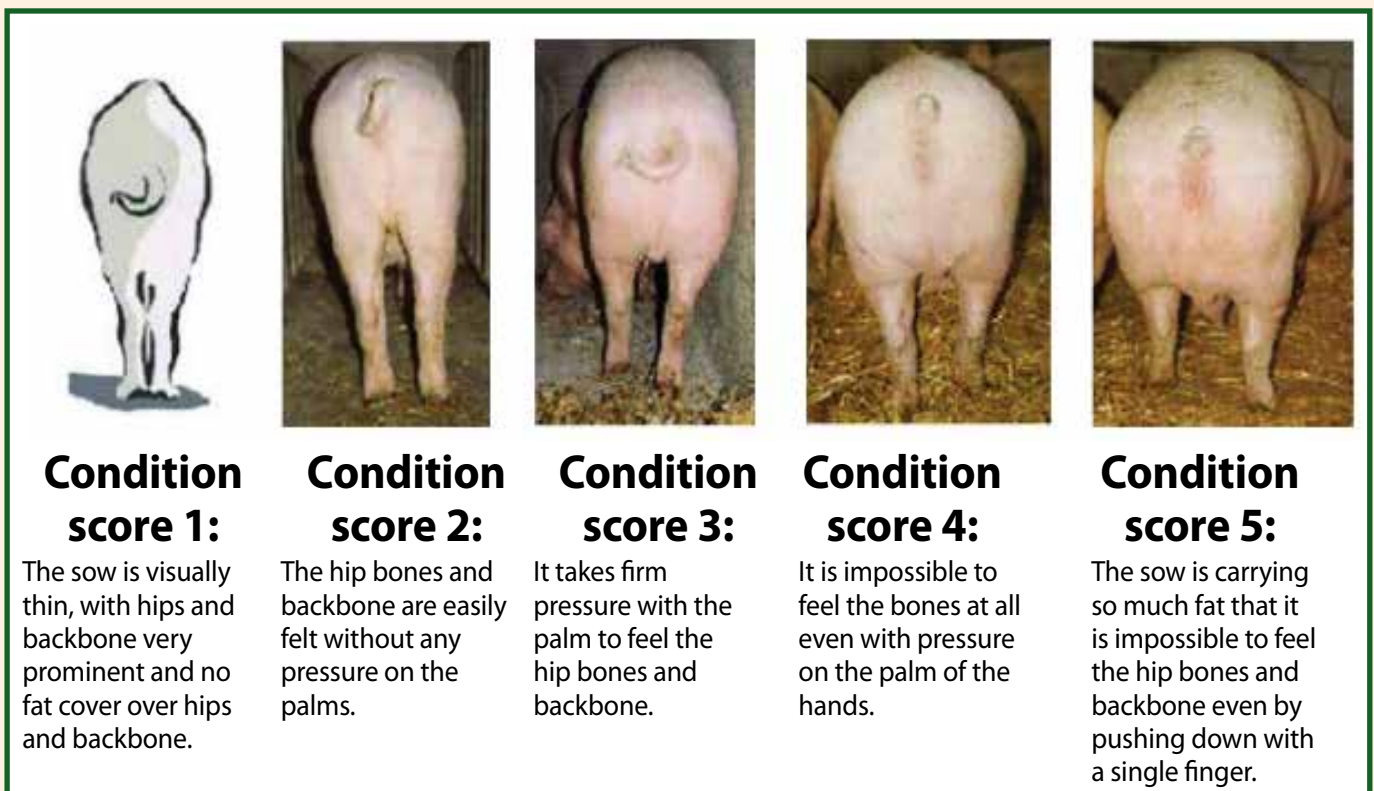


Table 1: Body condition score guidelines for critical points in the reproductive cycle

Critical Point	Target Body Condition Score
Sows at farrowing	3-3.5, with 80% scoring a 3
Lactating and Weaned Sows	2.5-3.5
Remedial action needed	Below 2.5

Barn Fire Prevention Resources

Barn fires can be devastating to farmers, causing loss of livestock, buildings and infrastructure. As the size of agricultural operations continues to grow in Ontario, farmers are more susceptible to large scale losses. It is estimated that 40% of barn fires in Ontario are caused by faulty electrical systems.

These risks are easily preventable with regular inspection and maintenance. Self-assessment is important to identify any potential risk factors. Infrared cameras and other robotic technologies allow the farmer to observe any electrical hot spots without using a licenced contractor.

There are many common practices and misconceptions which increase the risk of fire. Experiences from farmers who have suffered barn fires can help identify risk factors so they are not repeated. Proper ventilation practices must be followed closely in order to control methane concentration below the 5% by volume lower explosive limit.

"I had shipped out pigs and turned down the ventilation to conserve heat."

Manure agitation causes an increase in methane concentrations, with no ventilation this practice posed risk of explosion. Appropriate ventilation is required at all times. Similarly, maintenance inside barns must be done with extreme care.

"I had a problem with some of the gates, so I had been welding in one corner. Although I had a piece of wood down to control sparks, one of the sparks must have gotten into the manure pit."

Best management practices should be reviewed and followed in order to reduce these risks. The identification of fire hazards should be addressed promptly and taken very seriously.

"I had an inspection from the insurance company, and using their thermal camera, they had identified some hot spots in my electrical system. I just didn't get around to fixing them before the fire."

Each thermal hot spot is a potential fire ignition source for surrounding combustible material. Conduct regular inspections and fix problems right away.

Upgrading electrical systems components to the minimum NEMA4X grade should be done not only inside pens but is just as important in corridors and any other rooms.

"Inside my barn, I had changed the entire electrical component to the sealed NEMA4X units and eliminated plugs, receptacles and extension cords. But in the office and hallways, I still had the usual residential grade receptacles. I didn't think that I needed the more expensive ones in there. Guess I was wrong."

Combustible methane and corrosive hydrogen sulfide is also present in the corridors. Residential grade electrical components deteriorate quickly in that environment.

For more information and resources visit <http://www.omafra.gov.on.ca/english/engineer/barnfire/fireprevention.htm> or call 1-877-424-1300.

Jacqui Empson Laporte,
Environmental Specialist
(519) 357-7331
Jacqui.empsonlaporte@ontario.ca
Nicole Ludzki, Research Assistant

Figure 1: Corroded disconnect panel.



Heartland Farm Mutual, Waterloo, Ontario photo

Figure 2: Infrared thermal scan.



Heartland Farm Mutual, Waterloo, Ontario photo

Do you have a water contingency plan?

In 2016, many areas of the province saw very warm and dry conditions, and many wells were still dry leading into the winter. In other years, like the start to the 2017 growing season, the province experienced periods of excessive rain, leading to saturated soils and flooding. Both situations create many challenges for livestock and poultry farmers.

No one can control the weather, but we can plan for it. The Ministry of Agriculture, Food and Rural Affairs (OMAFRA) encourages you to plan for future weather – conserving water and using it efficiently can help during low water conditions, and having effective drainage systems in place can help with saturated soil and runoff.

Things to consider for low water conditions:

- Plan ahead. Know how much water your animals need and

try to predict how long it would take for your water sources to run dry. Have a contingency plan ready that you can carry out in case your water sources have maxed out. Use the Ontario Soil and Crop Improvement Association's Emergency Plan low water work sheet to help you with the contingency plan.

- Include a list of alternative water sources in your contingency plan. This can include water haulers and well drillers. Keep in mind that these sources may be unavailable at the height of low water conditions, so you'll need to plan ahead.
- Think about installing water-metering equipment to get accurate measurements of water use.
- Apply for a Permit to Take Water through the Ministry of the Environment and Climate Change (special rules and circumstances apply).
- Monitor heat stress in your livestock and poultry and have management solutions on-hand when heat stress runs high, but water levels run low.
- Look at your feed inventory now. If stocks are low for this time of year, consider looking for additional or alternative feed for fall and winter. It's not too early!

Things to consider for excessive water conditions:

- Look at your feed supply, as excessive rain can affect planting and harvesting times.
- Make sure you have enough straw or other bedding materials.
- Examine your property, your buildings and hard surfaces (like loading areas and parking lots) for flood risk areas. Install eavestroughs to redirect water away from your buildings and create a drainage plan. Plan the steps you'll need to take to move

livestock, feed and equipment in the event of a flood.

- Create a plan to manage barnyard/feedlot runoff. Determine if you have enough liquid manure storage capacity to store extra material from wet barnyards, and have a plan ready if you don't (such as using a neighbour's storage). Also consider what you'll do to avoid manure storage overflow from rain and flood water.
- Have a plan ready in the event that manure spreading is delayed due to rain and your storages are full.
- Think about your electricity generators – are they adequate for your farm's needs in case of a power outage?
- Pre-plan alternate routes to avoid travelling on flooded roads, considering services both into and out of the farm (such as milk trucks and feed trucks).

OMAFRA is working with other provincial ministries, conservation authorities and other partners to develop ways to help you manage water. There are existing resources that can help you, too:

- Environmental Farm Plan Infosheet #13: Water Efficiency
- OMAFRA's drainage resources
- Water Management Best Management Practices book
- The Low Water Conditions worksheet in Ontario Soil and Crop Improvement Association's Environmental Farm Plan Emergency Plan
- The Ministry of the Environment and Climate Change's Managing your water well in times of water shortage webpage.

Ontario has business risk management programs in place to help you when factors beyond your control affect your operation. Contact Agricorp for more information about these programs.

Visit OMAFRA's Adverse Weather,

Low Water, Irrigation and Drainage webpages for resources to help you prepare for various weather conditions.

Do you have questions about contingency planning? Contact OMAFRA's Agricultural Information Contact Centre at 1-877-424-1300 or ag.info.omafra@ontario.ca.

ontario.ca/omafra

From the Sept.-Oct. 1977 edition of PNV: **CHANGES COMING IN CANADA'S GRADING SYSTEM**

Beginning January 2, 1978, a new indexing schedule will allow marketing of hog carcasses up to 199 lbs. without penalty. Federal Government graders will measure back fat at the mid-back and loin instead of the present system of shoulder and loin.

The Ontario Pork Producers Marketing Board is a little apprehensive about the change-over period. They feel it advisable to warn producers that they could upset the whole concept if they flooded the market with heavy hogs.

The new agreement contains the following provision--If the percentage of heavy hogs (180 lbs. and over, dressed weight) rises from the current 11% to over 15% of all marketings and if the packers can document marketing problems, then an arbitrary adjustment of a 5 index point penalty can be imposed on all hogs dressing 180 lbs. and over.

Editor's Comments: This important and beneficial change in the grading system has been a long time in coming. Let's not foul up the system with too many heavy hogs. A gradual increase in the percentage of heavy hogs marketed will benefit everyone concerned.



2017 Ontario Monthly Hog Market Facts

Compiled by the OMAFRA Swine Team

OMAFRA.Livestock@ontario.ca

Month	Jan '17	Feb'17	Mar '17	Apr '17	May '17	Jun '17	1st 6 mo.
100% Formula Price (\$/ckg, 100 index)	\$150.70	\$174.67	\$173.64	\$152.66	\$172.71	\$201.55	\$170.99
* Same Month - Previous year	\$141.99	\$163.11	\$159.33	\$155.57	\$178.74	\$187.70	\$164.41
Average price (\$/ckg, DW total value)	\$180.00	\$203.63	\$204.29	\$184.76	\$200.92	\$230.64	\$200.71
Low price (\$/ckg, DW total value)	\$155.12	\$180.75	\$184.76	\$164.87	\$178.83	\$209.63	\$178.95
High price (\$/ckg, DW total value)	\$221.54	\$231.69	\$228.50	\$220.57	\$232.63	\$252.35	\$231.21
Ontario Market Hog Sales	418,185	400,000	492,050	380,084	358,344	469,687	2,518,350
*% Change Same Weeks - Previous Year	9.1%	-0.2%	-0.9%	-2.68%	0.02%	6.67%	1.33%
Average Carcass Weight (kg)	103.60	103.00	102.34	102.13	101.50	101.31	102.31

Weaned Pigs (\$/pig, 5 kg)**Formula	\$39.20	\$45.42	\$45.15	\$39.69	\$44.91	\$52.40	\$44.46
Feeder Pigs (\$/pig, 25 kg)**Formula	\$62.60	\$72.05	\$71.63	\$62.97	\$71.25	\$83.14	\$70.61
Value of Canadian Dollar (US\$)	\$0.7567	\$0.7640	\$0.7443	\$0.7340	\$0.7340	\$0.7508	\$0.7496
* Same Month - Previous year	\$0.7068	\$0.7228	\$0.7533	\$0.7777	\$0.7729	\$0.7761	\$0.7516
Prime Interest Rate at End of Month	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%

Corn (farm price) - \$/tonne	\$180.86	\$184.29	\$183.78	\$184.83	\$190.68	\$191.12	\$185.93
* Same Month - Previous year	\$189.25	\$187.00	\$180.28	\$179.68	\$189.01	\$202.40	\$187.94
Soybean Meal (Hamilton + \$20)-\$/tonne	\$526.12	\$523.55	\$510.84	\$481.69	\$476.68	\$465.79	\$497.45
* Same Month - Previous year	\$483.64	\$466.99	\$457.97	\$475.07	\$574.60	\$626.23	\$514.08
Corn - Western Ontario Feed - \$/tonne	\$201.47	\$200.84	\$197.93	\$197.38	\$204.22	\$202.79	\$200.77
* Same Month - Previous year	\$202.37	\$200.32	\$192.15	\$193.75	\$204.68	\$216.94	\$201.70
DDGS FOB Chatham/Sarnia/Alymer (\$/tonne)	\$139.75	\$150.00	\$165.20	\$175.00	\$176.75	\$174.50	\$163.53
* Same Month - Previous year	\$230.00	\$229.21	\$214.00	\$192.10	\$195.50	\$217.88	\$213.12

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

Value of Market Hog	\$175.46	\$201.88	\$199.43	\$175.22	\$196.76	\$228.86	\$196.27
Feed Cost	\$114.46	\$114.81	\$114.81	\$114.31	\$113.76	\$112.94	\$114.18
Other Variable Costs	\$41.45	\$41.25	\$41.24	\$43.69	\$43.78	\$44.08	\$42.58
Fixed Costs	\$23.76	\$23.76	\$23.76	\$23.76	\$23.76	\$23.76	\$23.76
Total Costs	\$179.67	\$179.82	\$179.81	\$181.77	\$181.30	\$180.79	\$180.53
Net Return	-\$4.21	\$22.06	\$19.62	-\$6.55	\$15.46	\$48.07	\$15.74



Swine Budget – June 2017

Compiled by the OMAFRA Swine Team

OMAFRA.Livestock@ontario.ca

Income (\$/pig)	Farrow to Wean	Nursery	Grow-Finish	Farrow to Finish
Market Pig @ 101% of Base Price \$201.55/kg, 110 index, 101.31 kg plus \$2 premium				\$228.86

Variable Costs (\$/pig)

Breeding Herd Feed @ 1,100 kg/sow	\$13.21			\$14.48
Nursery Feed @ 33.5 kg/pig		\$16.60		\$17.49
Grower-Finisher Feed @ 277 kg/pig			\$80.97	\$80.97
Net Replacement Cost for Gilts	\$2.54			\$2.78
Health (Vet & Supplies)	\$2.16	\$2.10	\$0.45	\$5.03
Breeding (A.I. & Supplies)	\$1.80			\$1.98
Marketing, Grading, Trucking	\$0.90	\$1.50	\$5.76	\$8.33
Utilities (Hydro, Gas)	\$2.35	\$1.38	\$2.13	\$6.17
Miscellaneous	\$1.00	\$0.10	\$0.20	\$1.40
Repairs & Maintenance	\$1.18	\$0.60	\$2.13	\$4.05
Labour	\$6.27	\$1.85	\$4.00	\$12.83
Operating Loan Interest	\$0.24	\$0.29	\$0.95	\$1.52
Total Variable Costs	\$31.64	\$24.42	\$96.59	\$157.03

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	\$13.21	\$16.60	\$80.97	\$112.94
Other Variable	\$18.44	\$7.82	\$15.62	\$44.08
Fixed	\$6.90	\$3.52	\$12.48	\$23.76
Total Variable & Fixed Costs	\$38.55	\$27.94	\$109.07	\$180.79

Summary	Farrow to Wean	Feeder Pig	Wean to Finish	Farrow to Finish
Total Cost (\$/pig)	\$38.55	\$68.06	\$138.51	\$180.79
Net Return Farrow to Finish (\$/pig)				\$48.07
Farrow to Finish Breakeven Base Price (\$/ckg, 100 index) includes 101% Base Price & \$2 Premium				\$158.85
Farrow to Finish Breakeven Base Price (\$/ckg, 100 index) excludes 101% Base Price & \$2 Premium				\$162.23

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

The power of knowledge.

In the palm of your hand.

Designed for use with PigCHAMP Reproductive, Mobile offers increased accuracy, reducing paperwork and ensuring a more productive workflow in the barn and in the office.



PigCHAMP >
Mobile



866.774.4242

sales@pigchamp.com

www.pigchamp.com



by
**MOE AGOSTINO
& ABHINESH GOPAL**

TRACKING A STRONGER DEMAND FOR PORK

American pork packing capacity is expanding over the next year, bringing opportunities for producers.

narvikk/E+ photo



Affordable feed will entice hog finishers to fatten more pigs towards the latter part of this year and into 2018, if they remain profitable.

Recently, American hog slaughter rates have averaged above the 2016 levels, as the past few quarters have set slaughter records. The U.S. Department of Agriculture (USDA) expects 2017 hog slaughter totals to be nearly 4 per cent higher than last year's record level.

But increased U.S. pork packing capacity will allow American packers to manage the record-setting supplies. (Some of the new plants will be functional by the fall and the rest will be running by the fall of 2018.)

And, in fact, the pork packing plants may have excess capacity. For some time, the markets have known about this capacity. The additional American processing capacity that'll be available by next fall adds up to almost 10 per cent more capacity per

week than was available in 2016, according to Steve Meyer from Express Markets, Inc. Analytics.

From the supply perspective, American breeding herd growth of 1.5 to 2 per cent is highly possible. Affordable feed will entice hog finishers to fatten more pigs towards the latter part of this year and into 2018, if they remain profitable.

U.S. pork packers' margins remain historically high as prevalent, wider U.S. farm-wholesale hog price spreads indicate better profits for them. This huge increase in slaughter capacity is likely to squeeze packer profits and bring the farm-wholesale price spread back down.

There is anecdotal evidence that large hog integrators' demand for pigs is high as they try to anticipate

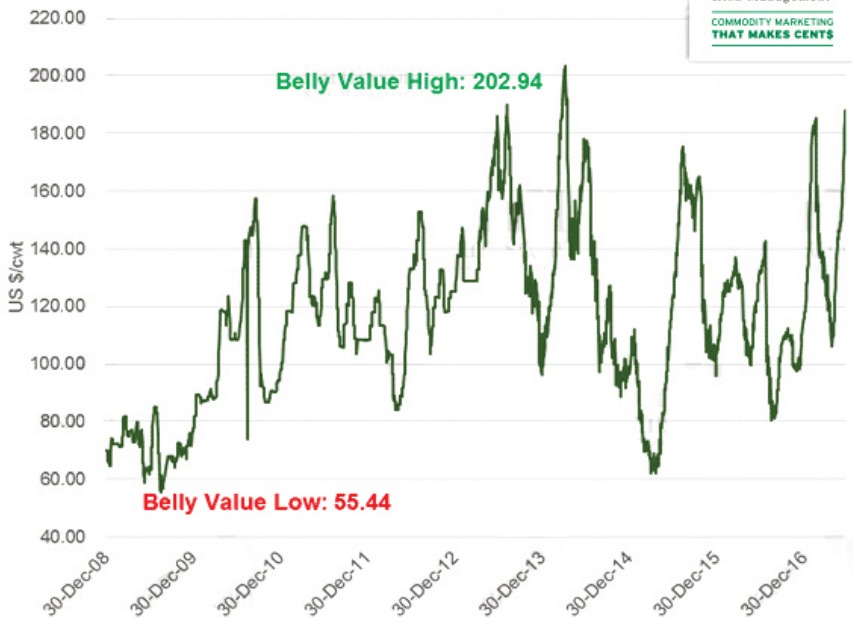
this future increase in pork capacity. Those hog producers looking to finish weaners to market hogs are driving weaner prices higher on a negotiated contract.

Weaner pigs have sold as high as US\$35/pig in spring versus the cash market at \$25/pig!

Looking near-term, demand for hogs, rather than pork, is an encouraging sign that prices should stay supported. The market could see strong seasonal demand domestically, as well as buoyant American exports.

Domestic and global demand for American pork will have to be strong to sustain packer margins and to ensure the sector remains profitable. Historically, producers and packers were profitable when consumer

U.S. PORK PRIMAL CUT BELLY VALUES



SOURCE: USDA

reduce the farm-to-wholesale margins and subsequently raise hog prices.

When the current combined American and Canadian pig crops go to market, the new plants could increase capacity by around 180,000 to 220,000 head per week. Though the combined pig crop indicates 70,000 to 80,000 more animals per week for slaughter, packer capacity should be ample, which in turn should support hog prices.

Exports remain the key moving forward as total U.S. pork export commitments thus far are running 5 per cent ahead of a year ago. The higher American slaughter capacity could not be coming at a better time. **BP**

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

demand for pork was strong.

At profitable levels, packers have bid aggressively for hogs even when they weren't available aplenty and when pork cuts were valuable. As has been the case for most of the year, American bacon prices are surging once again, indicating that consumer demand remains strong for bacon.

Pork cutout values and component primal values normally hit their highest prices during the summer, when supply tightens due to summer barbecue demands. Foodservices and retailers, who have been running special offers, have found demand to be better than expected.

Third-quarter pork production is expected to be about 6.4 billion pounds, about 4 per cent greater than a year ago, according to the USDA. Robust domestic pork demand, supported particularly by seasonal demand and high beef prices, is expected to keep third-quarter hog prices about 3 per cent below the same period last year.

The upcoming processing capacity is the biggest opportunity for hog producers to achieve higher prices.

The added competition among processing plants for pigs will likely

YOUR **TRUSTED** SOURCE

Information is plentiful in today's modern world. But as a pork producer, your valuable time is more limited than ever.

As much as you might need new information, **Better Pork** also gives you insight and understanding. We put the information into context, give it theoretical framing and suggest ways to act on it.

A trusted source.
To help you farm better.

Better Pork is the discerning farmer's trusted source for insight, analysis and investigative reporting about Ontario's pork industry.

We believe we need to earn your trust, with every magazine. It's our solemn vow to Ontario's pork producers and ag community.



BETTER
pork



by
**RICHARD
SMELSKI**

STUDYING AND APPLYING PHYSIOLOGY

Understanding the pigs' vision helps us shape best practices for managing pigs in pens and loading areas.

As an animal scientist, the physiology (the study of biological interactions which operate within a living system) of animals, especially pigs, always intrigued me. How do the body functions stay so harmonized? How can one body part interact with all the other parts of the body? How does the physiology within the body change due to nutrition, disease or social interactions? More challenging is: how do you put this study to practical use?

Let's use the pigs' eyes as an example. Pigs have a panoramic vision of 310 degrees and a binocular vision of 35 to 50 degrees, which means they have extra side vision per eye.

Pigs place greater emphasis on the sight to the side of the eye than do people. As a result, pigs have a greater capacity for noticing other pigs, potential sources of food and possible dangers. They also have decreased depth perception.

When managing pigs in a pen or loading area, we should take this peripheral vision into account. An opening at the side of the chute may not seem important to us, as we have frontal vision. Pigs, in contrast, can find the side of the chute at the centre of their visual field.

This visual capacity can sometimes lead pigs to try to escape through small gaps which we had thought to be insignificant.

Make sure that the chutes are completely closed at the sides to stop pigs from being distracted or startled by any outside stimulus.

Due to their vision, pigs perceive potential dangers quickly. We need to be mindful of pigs' escape zone and approach them within their panoramic vision. Otherwise, pigs will move from perceived dangers.

The direction in which pigs move is not spontaneous. Rather, their movement is deliberate. Pigs move



We should remember the animals' balance point in order to get the pigs moving in the desired direction.

backwards if the danger comes from the front and move forwards if the danger comes from behind. This information shapes the pigs' balance point and the direction they'll head to get away from the threat – us.

In order to control the pigs' movements, we must approach the animal slowly so as not to provoke an exaggerated response. We should remember the animals' balance point in order to get the pigs moving in the desired direction.

Maybe this information explains why some herdspeople can move pigs so calmly and efficiently. Others, in contrast, may be in a rush and unaware of the physiology of the pigs' eyes.

And did you know that pigs have dichromatic vision, meaning they only see in a wavelength of two

colors (blue and green)? They cannot distinguish higher wavelengths like red. Eyes have rods and cones – rods are responsible for vision at low light levels (scotopic vision) and cones determine colour, according to the colour's wavelength.

Pigs and other livestock are most "sensitive to yellowish-green and blue-purple light," says Dr. Temple Grandin, an animal behaviourist. So, we should not only consider the position of a moving board but also the colour.

Ultimately, the more we learn about the physiology of pigs, the better equipped we are to manage their care. **BP**

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



SUPERIOR GENETICS



UNRIVALED SUPPORT

Our experienced technical service team puts your needs first. No matter the environment, no matter the system, we work with you every step of the way to ensure your pigs thrive.



RELIABLE SUPPLY



ROBUST HEALTH

PIC INVESTS MORE INTO YOUR SUCCESS

We know we need to do more for you than deliver superior genetics. That's why we offer technical service, supply and health solutions to help you create robust, productive animals. Only PIC can provide all the support you need to get the most value out of every pig. To learn more visit www.pic.com.



PIC[®]



NEVER STOP IMPROVING

BioSURE™ NURSERY FEEDS *Reborn*

Get a lift in your nursery with BioSure Reborn.
Industry leading diets now made better with new
ingredients and improved technology.



...and still plasma free.



For more information contact your GVF or FNL Swine Specialist or
call us directly at one of the numbers below.

FORTIFIED
NUTRITION LIMITED

AB/SK 1-866-610-5770
MB 1-866-626-3933

Grand Valley
FORTIFIERS
FOR SOUND NUTRITION

1-877-625-4400
www.grandvalley.com

Enhanced with:
primarydiets
ASSURED NUTRITION FOR PIGLETS

Advanced Animal Nutrition for Improved Human Health