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Cover Photo

Frequent photo contest winner, Alberta's Jackie Thiessen, snapped this toothy shot for our fall-theme. Great shot!



Pork Belly technology

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Message from the outgoing editor



It's been a fun six-years!

Please welcome Alberta Pork's communications co-ordinator Andrew Heck as this publication's new editor. All content and photos should now be directed toward him, and I am confident he will do a fabulous job.

A big thanks to Charlotte and Marilyn at Alberta Pork for their help and support over the years, to Andrew and Brian at Capital Colour, (they design and print the actual magazine) and of course, to the industry itself. I have learned so much, and this role really helped me branch out of the beef business, rounding out both my knowledge and my resume.

After specializing in agriculture journalism for much of the previous decade, I am looking forward to focusing on my passion – wildlife and habitat conservation and biology journalism. My favourite story I wrote for the Canadian Hog Journal was on the wild boar crisis, and I look forward to more investigative stories like that in my future. Last year, I also started working full-time as a paramedic in the city of Medicine Hat, after working in fire

and EMS casually for many years. EMS demands a lot of my energy, but it is very rewarding to give something back to a province (and country) that has afforded me so many opportunities.

I am proud what I have accomplished with this publication, despite some pretty difficult obstacles. Over the past six years, the magazine has become a national publication, changing from the Western Hog Journal to the Canadian Hog Journal, we have won two national journalism awards, we've launched a website, and we changed our standards to become a true presence in Canadian agriculture journalism. Of course, none of this could have been accomplished without our loyal readers and our advertising partners.

Thank you – everyone – for the experience, the learning opportunities, and the memories. I will part ways by telling you the same thing I tell my two sons before they leave the house...

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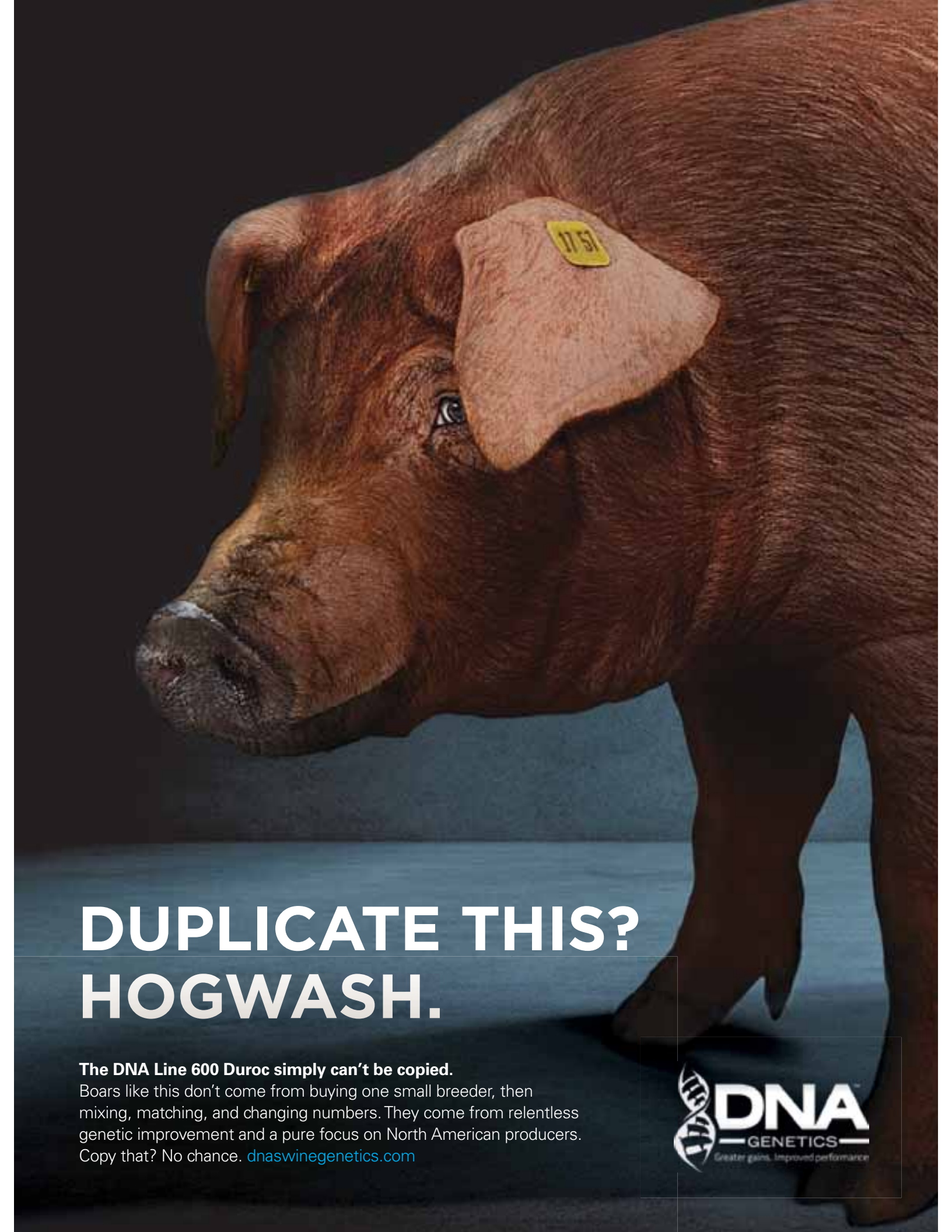


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Message from the editor



Hello, faithful readers! I am very excited to be named the incoming editor of the Canadian Hog Journal. I would like to thank outgoing editor Sheri Monk, who is helping me make the transition. Her talent, insights and dedication to this publication served it well for several years and will be missed.

In addition to being the new editor of the Journal, I am the

Communication Programs Coordinator with Alberta Pork, a position I took up in June 2018. Since then, I've had a crash course in all things pork, and I know I still have a lot to learn.

My educational background is in corporate communications, and my prior work experience includes the science and technology sector, music and sports. I grew up in suburban Edmonton as a first-generation non-farmer, but I am still very proud of my family's century-old agricultural roots in the Bodo, Alberta area, along with our past in Russia and Germany.

The Canadian pork industry is facing more challenges than ever, and I hope to publish helpful, thoughtful pieces touching on issues from across the country, providing a platform for

discussion that drives the industry forward, for the benefit of everyone in the value chain.

Let's not mince words: We need fast, effective action in many areas to help the Canadian pork industry stay relevant for years to come, and there's a lot of work to be done. By bringing attention to important matters and celebrating our victories, we can grab the attention of pork buyers, politicians and influential people around the world.

We need to act to support our producers, processors, researchers, retailers and consumers. We need to act to succeed, since this is what we know, and it's what we do.

I look forward to working with you to keep the the conversation going. I hope you look forward to what's in store with this magazine and hearing from diverse, passionate voices in the industry.

I would like to ask you to keep me honest and help shape this magazine the way you want to see it. It's yours, not mine, after all. I appreciate the guidance and encouragement I've received so far, and I am grateful to have been extended this opportunity. Here's to you! ■

Andrew Heck
Editor



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New Quebec hog agreement in force

Last spring, the Quebec marketing board supervisory body, the Régie, accepted a proposal submitted by the Quebec hog board to introduce a price mechanism based on the value of pork in the U.S. market. A premium of \$2/100 kg will be added to this formula for hogs under the Qualité Québec agreement.



By Kevin Grier

Regarding the new mechanism, an adjustment will be added (or subtracted) to the price paid for live hogs when the ratio of the live hog/pork price cut-out value goes under 90% or above 100%. That is, if the price of hogs based on the current U.S. hog price formula is below 90% or above 100% of the U.S. pork

cut-out value, the difference between those limits and the actual price will be added or subtracted as an adjustment.

In return, the Régie considers that the increase in the price of hogs and the premium granted justify greater rigor in terms of quality. For this purpose, it concludes that a penalty may be deducted by the buyer for problems of tattooing, full stomachs and dirty pigs.

As of late September, the board and the processors are still in dispute over certain aspects and clarifications of the new plan, but the plan nevertheless is in force in Quebec as of June 2019.

Expensive fall coming for Quebec packers

Based on weekly data over the 2013-2017 five-year period, there were 21 weeks of the year on average in which the hog price was below the 90% floor. No week was above 100%. So

based on the average, producers in Quebec can expect a higher price due to the new formula compared to the old formula in 21 weeks of the year. That is in addition to the \$2.

Based on the weekly average performance over 2013-2017 and based on futures prices in mid-September, packers can expect to pay well above their competitors across North America for the rest of the year and into January. In fact, based on my crude methodology, Quebec packers can expect to pay \$10/c/kg over their competitors and over what they would have paid prior to the new agreement. Again, that is in addition to the \$2 premium.

Quebec packers are likely to kill about 1.3-1.4 million hogs in the fourth quarter. The new pricing agreement could end up costing them over \$17 million. This is in addition to the big challenges they are facing due to the loss of China.

Packers can historically plan on good margins in the fourth quarter to offset poor margins in the summer. A significant part of the profitability that is planned on for investment ROI development is now gone for Quebec packers. In addition, the agreement is going to make it much more difficult for packers to pay much needed wage increases in order to retain or attract workers. This is in addition to the fact that Quebec packers will be less competitive now versus other packers in North America.

Ending specific agreements

Packers in Quebec over the years have developed over 50 separate contracts or agreements with producers that have been approved by the board. These agreements are for specific production or quality characteristics. They typically involve a premium over the minimum price mandated in Quebec. Now many if not most of those agreements have been cancelled. That

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makes sense given the added costs imposed by the new agreement. The agreement makes it much more difficult for producers and packers to work together on specific programs. It reduces the ability of packers to develop premium programs.

The loss of China

In early September the Canadian Meat Council (CMC) issued a statement saying that the cost of the “temporary suspension” of Canadian pork and beef exports to China imposed on June 25 is approaching \$100 million and the longer it continues, the greater the risk to Canadian jobs. The statement said that “As we enter the third month of suspension, the pork and beef sectors are calling on the Government to make clear their strategy to reopen the Chinese market and ensure we have more options for export diversification when such issues arise.”

The Meat Council’s release coincided with the release of the July trade data last week. The data showed Canadian July exports to China totaled about 2,000 tonnes. That compared to 23,000 tonnes in June and an annual high of 36,000 in May. In fact, prior to the Chinese ban of Canadian meat, it was on pace to become the largest export market for Canadian pork in 2019. That is fascinating because that means that it would have beat out the U.S. as the largest destination. That would be the first time that a country other than the U.S. was the largest export market for Canadian pork.

Lost sales leverage

I don’t know how the CMC came up with the \$100 million estimate of the cost of the suspension, but it is plausible. Even starting with the simple loss in dollars during July. The July trade value to China for pork was \$4.5 million. That compares to the June sales of \$55 million and the May sales of \$90 million. Given the August sales will likely be zero, the lost sales alone will be about \$100 million. Of course, those lost Chinese sales would have been made up to a degree in domestic or other export markets, but they do represent real losses.

Other forms of losses that are hitting the industry would include increased storage

costs, write downs or write-offs of product that was destined for China and the biggest cost; decreased market value. The loss of a major buyer result in reduced competition, reduced Canadian seller leverage and of course reduced prices. Canada had about 45 countries buying pork in May. Losing China as a \$90 million customer is different than losing Peru at \$200,000.

It is likely that the biggest area of financial loss pertaining to the China suspension is in the offals. Unlike pork meat, China has long been the main destination for pork offals. With China in the market, products ranging from heads to stomachs to feet would have generated returns of \$1-2-3/ kilogram, now packers are getting cents per kilogram. Rendering can be considered as an option given the tradeable value available without China.

Traditionally offals have been the profit margin for packers, now that margin has been nearly eliminated.

\$100 million

It is difficult to put a final number on what Canadian packers have lost. One way that I like is to look at the relative relationship of the Canadian cutout to the U.S. cutout. Since the loss of China, the Canadian cutout has lost 5% of its relative value versus the U.S. cutout from the beginning of the year until now.

That relative loss is probably in large measure due to the loss of China. Based on estimated cutout values and kills, that loss translates to about \$4 million a week on the pork meat alone, or about \$30-40 million since the ban started. I expect that the loss on the offals would be that much or more. Couple that with the losses and write downs on meat that was destined for China, added storage costs and other losses and the CMC estimate of \$100 million looks very good. ■

Kevin Grier Market Analysis and Consulting provides industry market reports and analysis, as well as consulting services and public event speaking. You can reach him at kevin@kevingrier.com to comment or to request a free two-month trial of the Canadian Pork Market Review.




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Canadian Hog JOURNAL

HOT ISSUES

Eco-friendly tech helps farms offset carbon and costs

By Andrew Heck, Alberta Pork

An Alberta pork producer is taking a large environmentally sustainable leap, thanks to a new heat recovery unit that will help improve operational profitability and self-reliance. The new unit adds to the producer's existing suite of carbon-neutralizing tools, which includes conservation cropping to earn "tillage credits."

Cogeneration, or combined heat and power (CHP), is the use of a prime mover engine to generate electricity and heat at the same time. A new CHP unit was unveiled on August 8 at Hartland Colony near Bashaw, about 130 kilometres southeast of Edmonton. The unveiling event welcomed more than 100 producers, industry partners and community members to learn more about the technology and celebrate the accomplishment. Hartland's use of CHP as part of their farming operation in Alberta is turning heads as this technology starts to take hold outside of Europe.

Hartland's CHP unit took under two weeks to install and has been up and running at 85 per cent capacity since mid-May 2019. Approximately 90 per cent of all recovered heat can be



used during nine months of the year, which translates into a 35 per cent reduction in overall energy costs or more than \$230,000 per year. In just under three years, the system is expected to have paid for itself, while the life of the equipment is estimated to be 15 years.

"Consumers want to see how producers are 'going green.' By adopting systems like CHP, we can say the pork industry is moving in the right direction," said Darcy Fitzgerald, Execu-

CONTINUED ON PAGE 12

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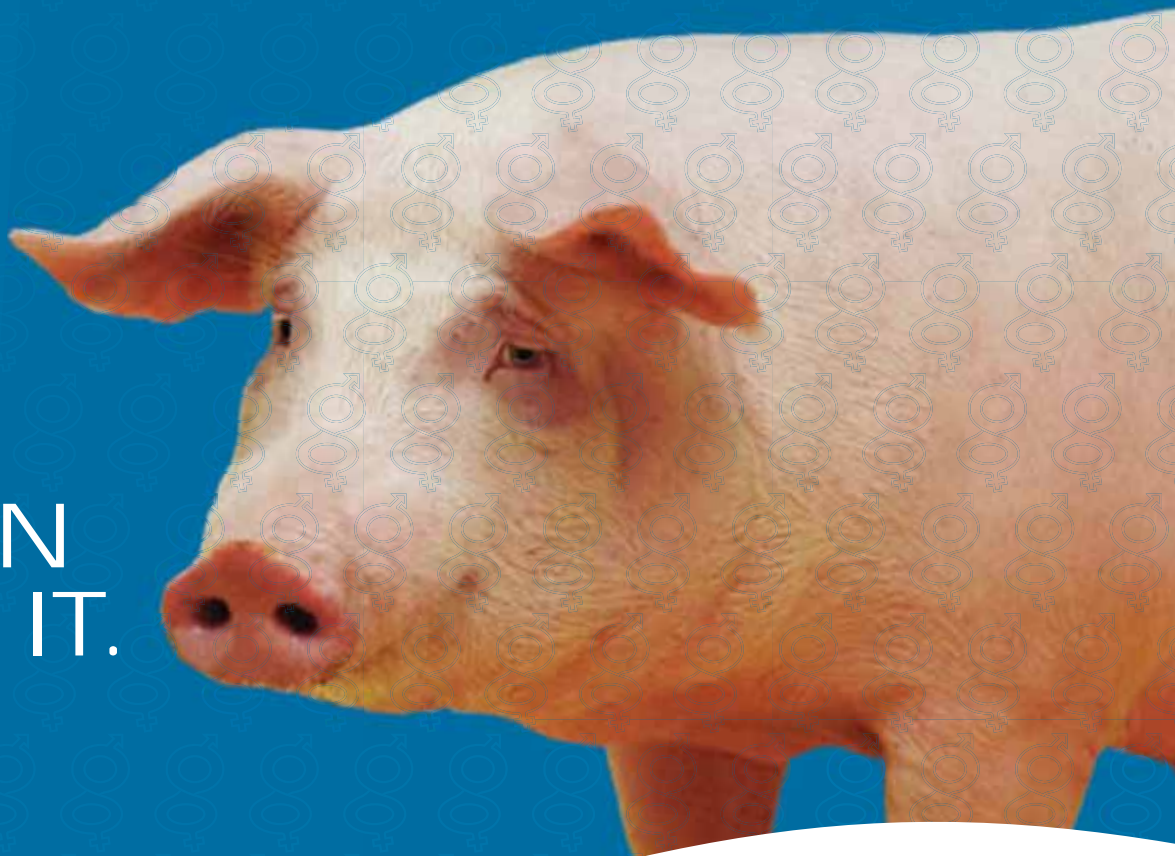
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tive Director, Alberta Pork. “Staying competitive in the global market today means that you have to cater to consumers who are better-informed and more conscientious than ever before.”

CHP works by taking a single fuel source (natural gas, in this case) and outputting two types of energy: heat and electricity. Depending on the ambient air temperature, which changes dramatically from season to season in Alberta, the system automatically regulates its internal environment by preheating intake air or rejecting excess engine heat as required.

“Our electricians started looking for ways that we could save costs, and when they looked into CHP, they thought it was a good idea. We crunched the numbers and determined it was worthwhile to pursue,” said Martin Waldner, Hartland’s hog barn manager and board director with Alberta Pork. “Before making our decision, we went over to Europe to see what kinds of units were being used there. Everyone we spoke to was satisfied with their experience using CHP.”

Hartland’s starting point in evaluating the potential of CHP was to measure the colony’s emissions and energy consumption, which included everything from the hog barn, feed mill, canola crushing plant and other on-farm processes, in addition to residential demands. Once that information had been



The CHP unit efficiency uses clean-burning natural gas to run an engine that creates power and recovers waste heat. The system is kept stable by using a combination of temperature-regulating inputs and outputs.

collected, it was plugged into a return-on-investment (ROI) calculator to determine exactly how much benefit a CHP system could bring.

To further understand the implications of CHP, the colony worked with Airdrie-based CSG Canada to model the data using the company’s proprietary software. By analyzing the data models, it was possible to determine the colony’s peak and minimum demands (their highest and lowest electricity usage rates) to find out how and when power was being drawn. CSG’s goal is to drive change to smarter energy use while seeing a lasting, transformational benefit from doing so.

“Higher energy costs and carbon offset incentives make Alberta a natural fit for CHP,” said Matt Alfke, Sales Manager, CSG. “Colonies and other large producers with high energy demands especially can take advantage of these highly customizable systems, which we tailor according our clients’ unique needs.”

In Europe, CHP technologies have been a mainstay for more than three decades. In Canada, they are just starting to make

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waves. In Alberta today, operational CHP systems are in use at the University of Alberta and Calgary’s Chinook Mall, among other locations. The technology has even been adopted by recreation centres, grocery stores and property developers.

There are a variety of CHP systems available around the world. One such manufacturer is TEDOM of the Czech Republic. In North America, TEDOM products are distributed by Calgary-based Co-genergy Corporation, which helped connect Hartland to their unit of choice. The company’s objective is to bring turn-key cogeneration and trigeneration solutions to clients in various sectors, including agriculture, health-care, oil and gas, manufacturing and more.

Currently, a 1,100-kilowatt CHP system is being built in Leithbridge by Co-genergy to produce dried hay and corn silage animal feed for domestic use and export—major progress for using CHP to lower the cost of feed for livestock producers.



Martin Waldner, hog barn manager, Hartland Colony (left) and Darcy Fitzgerald, Executive Director, Alberta Pork (right) proudly stand next to the new CHP unit.

“It is very encouraging for Co-genergy and TEDOM to find Alberta farmers receptive to this well-established technology, realizing the benefits to livestock farming in colder climate regions,” said Chris Cilia, President, Co-genergy Corporation. “Sustainability is key in farming, and CHP and other technologies have a lot of potential to help agriculture become more efficient in this competitive sector.”

TEDOM’s units come in several sizes and can be installed outdoors or indoors—factors that are considered when designing a functional system. After having seen TEDOM equipment in operation, Hartland worked with Co-genergy and CSG to tie together the colony’s wishes with what could be successfully implemented on-farm.

But CHP is only one part of the equation for Hartland. For the better part of a decade, the colony has worked with Carbon Credit Solutions Inc. (CCSI) to take advantage of carbon offset

incentives. CSG is a wholly owned subsidiary of CCSI, which was founded in 2008 to develop and consult on carbon credit projects for clients in Canada and beyond.

In 2007, the Government of Alberta established its Emission Offset System, which has been rewarding eco-conscious producers who are looking to cash in on reducing their carbon footprint. For grain growers, including pork producers who grow feed for their herds, no-till seeding or “conservation cropping” has become a popular practice. The program pays \$1.50 for every acre direct-seeded, which reduces soil disturbance, assists with nutrient fixing and sequesters carbon. The practice means less fertilizer is needed, which helps limit the dispersal of nitrogen in the atmosphere.

In addition to conservation cropping, opportunities exist for producers to qualify for carbon credits or government subsidies. To do this, applicants must be able to quantify energy savings, which takes into consideration the generation of supplementary heat and power, along with electricity usage and displacement. Once a baseline is established—the predicted or historical energy usage without efficiency upgrades—the applicant measures against this baseline to de-

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Matt Alfke, Sales Manager, CSG Canada, presents on his company's work during the unveiling event.

termine how much energy is saved versus the actual usage as part of the project.

While any producer can take advantage of the program on their own, it helps to have the support of experts. As part of its contracts with producers, CCSI acts as the “project developer,” which takes risk away from the client and does not come with any up-front costs. CCSI purchases the credits as a guarantee, then works to demonstrate a client’s energy savings under the program. Once verified, CCSI passes those savings onto the client, keeping some of that share for their services. Since the introduction of the program, CCSI has helped more than 3,000 Alberta producers earn over \$50 million by quantifying and selling their carbon credits.

Agriculture across Canada is becoming increasingly more energy-efficient and eco-friendly than ever before, thanks


to proactive approaches in the public and private sectors to incentivize positive change. While producers across Canada have lamented the introduction of more recent provincial and federal carbon taxes, Alberta’s carbon markets provide opportunities for producers to profit from emission reductions, rather than penalizing the agriculture sector.



No-till soil is less compacted than tilled soil, which makes for easier seeding and leads to less soil erosion. Tilled soil loses its natural structure, requiring additional tilling over time. Source: Exapta Solutions, Inc., Kansas, USA.


In Alberta pork production, Hartland Colony stands out as an early adopter of power- and money-saving strategies that will surely impress upon other producers and consumers alike. Alberta’s pork industry is leading by example, along with partners across the country, when it comes to environmental sustainability in agriculture. ■

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Industry News

Swine Breeders' Merit Award presented to Rod de Wolde

Submitted by the Canadian Centre for Swine Improvement

Rod de Wolde was recently awarded the Swine Breeders' Merit Award at the annual general meeting for the Canadian Centre for Swine Improvement (CCSI) on July 4. CCSI presents this award to breeders who have made a significant contribution to the Canadian Swine Improvement Program through their leadership, achievements, and participation in performance testing.

Rod and his family started BMR Genetics, a purebred nucleus, with stock from his parents in 1999. They relocated the herd to Millbrook, Ontario where they produced high health breeding stock until 2018 where a fire tragically destroyed the herd.

Areas of focus in selection decisions included production, growth and feed conversion. BMR Genetics, though a small nucleus herd, was far reaching, with genetics utilized by

producers across the country. They had boars mainly placed at the OSI AI unit in Ontario. BMR Genetics was part of the Canadabred organization, which allowed them to remain distinguished amongst breeders. This organization then merged with the Alliance of Independent Breeders to form what is now Alliance Genetics Canada (AGC), a leading-edge company providing world class swine genetics across Canada and internationally.

Outside of the farm, Rod is very active in industry. He is currently the Chair of Ontario Swine Improvement and has sat on their board for over 10 years. He has been active in local and provincial pork associations as a delegate for Ontario Pork, and as a leader on the Ontario Pork's Research and PED committees. Rod has been on the CCSI board since 2011 and from 2013-2017, spent four years as the Chair. Rod was recently appointed to a two-year term on the Normal Farm Practices Protection Board. He is supported by his wife Shari and their three daughters Hailey, Keira, and Olivia.

CCSI would like to thank Mr. de Wolde for his dedication and service to the swine industry and congratulate him as this year's recipient of the Swine Breeders' Merit Award. ■

The Canadian Centre for Swine Improvement was created by the Canadian Pork Industry to provide leadership, coordination and services for swine genetic improvement. Its members are the regional swine improvement centers in Western Canada, Ontario, Quebec and Atlantic Canada, the Canadian Pork Council, the Canadian Meat Council, the Canadian Swine Breeders Association and users of the Canadian Swine Improvement Program.



Rod de Wolde (center) accepts the Swine Breeders' Merit Award. Presenting the award: Brent Robinson (Chair, left), Brian Sullivan (C.E.O., right).

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Topigs Norsvin Canada Inc. Announces New Ontario Business Development Representative

Key appointment enhances Topigs Norsvin Business Development team

In August of 2017, Veronica Anderson joined the Topigs Norsvin team on a part time basis as the Ontario Logistics Coordinator. After excelling at this position, she has now joined the Ontario Business Development team. She will continue to provide the Ontario logistics services, while also focusing on managing customer relationships.

Veronica gained experience in swine production while in high school, but has spent the majority of her career focusing on client services in both the financial and insurance industry. “Veronica has done well in representing Topigs Norsvin. The relationships that she has built with both Topigs Norsvin Ontario multipliers as well as customers make her a great asset to the Ontario team” said John Sawatzky, Sales Manager for Canada.

“Topigs Norsvin has provided me with an excellent opportunity to learn and grow. I’m looking forward to continuing to build relationships with both new and existing Topigs

Norsvin customers,” said Veronica. In her spare time, Veronica is busy running her two young sons to baseball games, while sneaking in a yoga class now and again.

Veronica can be reached at 519 440-6226 or at veronica.anderson@topignorsvin.ca.

Topigs Norsvin Canada is a leading swine genetics supplier in North America. Topigs Norsvin produces and develops sound, profitable pig genetic programs and breeding systems for commercial hog production and is one of the largest genetics companies in the world with business activities in more than 55 countries. ■



Veronica Anderson

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B.W. Kennedy Memorial Award presented to Lee Whittington

Submitted by Canadian Centre for Swine Improvement

Lee Whittington, of Saskatoon, Saskatchewan, was awarded the B.W. Kennedy Memorial Award at the annual general meeting for the Canadian Centre for Swine Improvement (CCSI), held in Ottawa, Ontario on July 4, 2019. CCSI presents this award to recognize individuals who, through their involvement in scientific research, program development or program implementation, have made a significant contribution to the Canadian Swine Improvement Program and swine industry.

Lee Whittington graduated from the University of Guelph with a Bachelor of Science in Agriculture. He began his career as the Swine Nutritionist and Swine Products Sales Manager for ShurGain Feeds in Ontario. He then became the Manager of Information Services at Prairie Swine Centre (PSC) in 1992. He moved into the role of President and CEO in 2008 where he provided leadership and innovation in how research would be embraced and utilized by industry and governments, until his retirement in 2018. Through his work at PSC, Lee was able to strengthen the organization's brand, and the influence of new knowledge to improve the net income of pork producers across Canada, as well as significantly strengthening the resources in research, especially in the area of welfare and behaviour. By ensuring a strong connection and focus on serving the commercial pork industry, and linking the outcomes of science to communication, Lee was able to place PSC in an enviable position of having its outcomes known and adopted quickly by pork producers, transporters and the packing/processing industry. During Lee's tenure the base funding grew from industry and government groups across Canada. Since PSC began in 1992, the dedicated scientists and staff have provided outstanding leadership in applied research, starting a new experiment every 9-11 days. The research at the centre has contributed to many improvements throughout the Canadian swine industry.

Lee has held positions on the Board of Directors and working committees for several organizations and events including CCSI, Ag-West Bio, Banff Pork Seminar and Ontario Pork Congress, among others. Even in retirement Lee

continues to sit on several Boards and committees, including CCSI. He has received several awards, most recently the Industry Leadership Award at the Saskatchewan Pork Industry Symposium in 2018. Lee and his wife Grace own and operate the Riverbend Plantation Saskatoon Berry Orchard and the HomeQuarter Coffeehouse in Saskatoon.

CCSI would like to take this opportunity to thank Lee Whittington for his contribution of knowledge and his dedication to the Canadian Pork Industry and congratulate him as this year's recipient of the B.W. Kennedy Memorial Award.

The Canadian Centre for Swine Improvement was created by the Canadian Pork Industry to provide leadership, coordination and services for swine genetic improvement. Its members are the regional swine improvement centers in Western Canada, Ontario, Quebec and Atlantic Canada, the Canadian Pork Council, the Canadian Meat Council, the Canadian Swine Breeders Association and users of the Canadian Swine Improvement Program. ■



Lee Whittington (centre) accepts the B.W. Kennedy Memorial Award. Presenting the award: Brent Robinson (Chair, left) and Brian Sullivan (C.E.O., right).

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Alltech announces industry-wide survey on women in agriculture

Submitted by Alltech

The challenges associated with the ever-increasing global population have made it more important than ever for the agri-food industry to be able to perform at its full potential. Inclusion and diversity in the workforce are essential to shaping a sustainable future – and yet, according to the Food and Agriculture Organization of the United Nations, the gender gap in the food and agriculture industries is extensive. To gather real-world insights into the professional landscape for women in agriculture, Alltech has announced its support of an industry-wide survey.

Launching on Sept. 10, this global survey, which will be conducted in partnership with AgriBriefing, aims to collect feedback about the barriers that impede progress and to identify the resources needed to ensure workplace equality. The survey is open to women and men across all sectors of the agri-food industry, and the results will be revealed at the Women in Food & Agriculture Summit, to be held Dec. 3–4, 2019, in Amsterdam, the Netherlands.

This collaborative effort to reach across sectors and geographical boundaries in an attempt to improve the industry’s outlook reflects Alltech’s vision for a Planet of Plenty™. During ONE: The Alltech Ideas Conference, held in Lexington, Kentucky, in May, Dr. Mark Lyons, president and CEO of Alltech, outlined the company’s vision for a future with enough nutritious and safe food for the rising population, with our environment and resources preserved for future generations. A diverse and inclusive workforce is among the most valuable of those resources.

“It is my experience that the most effective organizations embrace diversity and support inclusion,” said Dr. Lyons. “The food and agriculture sectors include many talented female leaders, and we need to make sure young people see themselves represented and can envision a future career in the industry. Through this industry-wide survey, we hope to gain a better understanding of the challenges facing women in ag and identify opportunities for growth.”

Women and men in all sectors of the food supply chain are encouraged to contribute to this important global conversation about gender equality in agriculture by taking the survey, linked to in Alltech’s press release found at <https://www.alltech.com/press-release/alltech-announces-industry-wide-survey-women-agriculture>.

For more information on the Women in Food & Agriculture Summit, visit wfasummit.com, and join the conversation on social media using #WFA19. ■

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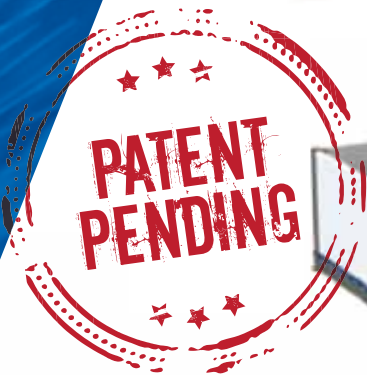
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DNA Genetics welcomes DNA South America as distributor for South America

Submitted by DNA Genetics

DNA Genetics recently announced that DNA South America has become the exclusive distributor of genetics to South America.

DNA South America, located in Campinas, São Paulo, Brazil, will provide pork producers throughout South America with DNA Genetics' maternal and terminal lines. DNA Genetics is ready to export live animals and frozen semen to Brazil from its nucleus herds as soon as November 2019, and the transfer of genetics to Brazilian producers will begin soon after.

"Introducing our genetics to South America is an excellent opportunity for us to expand our footprint in the global marketplace," says Brett Bonwell, CEO of DNA Genetics. "We believe that DNA South America has the people, expertise, and customer base necessary to achieve success in South America with the progressive producers in that market."

Thomas Bierhals, CTO of DNA South America, said, "The partnership we've formed with DNA will allow us to bring

our customers the highest-quality genetics, genetic lines that thrive in large commercial systems, and a final product that's widely accepted and valued in the global marketplace."

About DNA Genetics

DNA Genetics is a producer-owned swine genetics company that truly understands pork production. Our team members are relentlessly committed to the continuous improvement of our genetic lines through individual performance and genomic testing. All of this means a faster rate of genetic progress in both our maternal and terminal lines that's passed quickly onto our customers. DNA Genetics' mission is to provide superior value to our customers through high-quality and low-cost genetics designed to meet customers' needs better than all alternatives. ■

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RESEARCH AND INNOVATION

The nutritive value of canola meal fed to growing pigs did not differ greatly among samples from five different Western Canadian crushing plants

Bich Van Le Thanh,¹ Eduardo Beltranena,^{1,2} Xun Zhou,^{1,3} Lifang Wang,¹ Ruurd T. Zijlstra^{1*}

¹Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB; ²Alberta Agriculture and Forestry, Edmonton, AB;

³Gowans Feed Consulting, Wainwright, AB *E-mail address: ruurd.zijlstra@ualberta.ca

Take Home Message

We evaluated the nutritive value of regular (solvent-extracted) canola meal from 5 different crushing plants in Western Canada fed to growing pigs (70 lbs). We found that:

- Protein content varied from 35.7 to 41.3 per cent. Of this protein, 84.4 to 86.7 per cent of its building blocks (called amino acids) was digested by the end of the small intestine of growing pigs.
- The energy utilizable by pigs (called predicted net energy; NE) of the 5 canola meal samples ranged from 1.8 to 1.9 Mcal/kg, which was slightly greater than the value the feed industry typically uses (1.75 Mcal/kg).
- Glucosinolates content in the 5 canola meal samples ranged from 1.2 to 7.6 µmol/g, which was below the level to cause any concerns of reducing feed intake.
- Fat content of canola meal was low, ranging from 1.1 to 3.6 per cent, and thus of not much practical relevance to growing pigs.

The quality of canola meal is affected by several factors

Regular canola meal is produced in large crushing plants in Western Canada. It is generally fed as a supplemental source of protein in pig diets replacing soybean meal. Feeding locally-produced canola meal in substitution for imported soybean meal can reduce feed cost and provide economic sustainabil-

ity to the swine industry. At high feed inclusions (more than 10 per cent) in pig diets, fluctuation in the nutritional quality of canola meal is amplified and may result in inaccurate diet formulation, thereby cause unpredictable growth performance, waste of nutrients, and reduced profit.

Seed type and processing conditions affect the quality of canola meal. For example, yellow-seeded *Juncea* contains

CONTINUED ON PAGE 24

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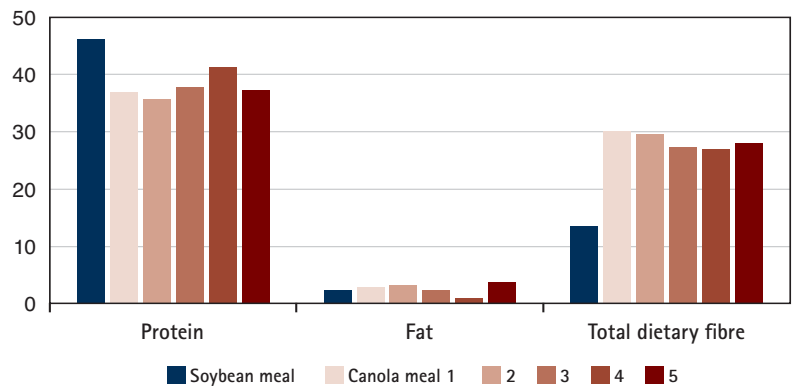
RESEARCH AND INNOVATION

more total glucosinolates, and is bitter than regular black-seed *Napus* canola meal. Prolonged exposure to high temperature and moisture in the desolventiser-toaster that evaporates the residual solvent after oil extraction can brown the meal forming undigestible complexes between amino acids and sugars. Lysine, which is the most limiting amino acid for pigs, is the most affected by prolonged heating. But short-term heating of the seed prior to pressing inactivates a seed enzyme (myrosinase) that converts glucosinolates into harmful compounds. High fibre content mainly from seed hulls not only physically dilutes energy and amino acids content, but also limits access of gut enzymes to break protein into amino acids thereby reducing growth. We thus decided to study the nutrient composition and digestibility of canola meal samples collected from 5 large crushing plants in Western Canada. We compared them to soybean meal as that is the world standard protein meal fed to pigs.

The canola meal samples

Dark-seeded *Napus* accounts for 95 per cent of canola production in Canada. We sourced 5 canola meal samples in a single

Figure 1. Analysed nutrient content of 5 canola meal samples compared with soybean meal (standardized to 10 per cent moisture).



crop year from a single production batch and 5 different commercial, solvent-extraction canola crushers in Alberta, Saskatchewan and Manitoba. These samples thus represented the major canola-growing areas in Western Canada.

The pig experiment

We conducted this experiment at the Swine Research and Technology Centre, University of Alberta (Edmonton, AB).

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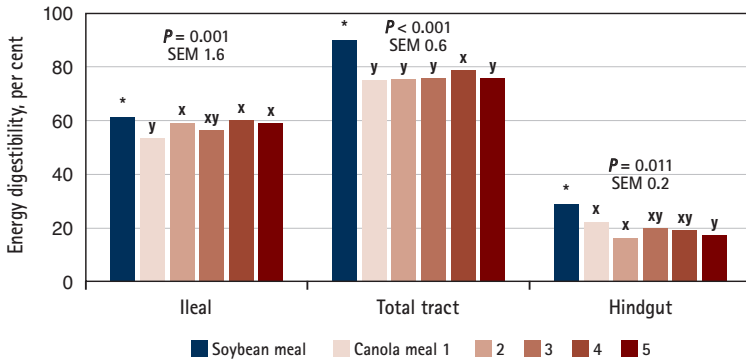


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Figure 2. Ileal digestibility, total tract digestibility, and hindgut fermentable portion of energy in 5 canola meal samples compared with soybean meal in growing pigs.



Eight growing pigs (70 lbs; Duroc × Large White/Landrace F1; Gentex Hybrid, Hypor, Regina, SK) had a T-cannula surgically implanted at the end of the small intestine to collect digesta. That allowed us to evaluate how much was digested by the end of the small intestine (digesta) compared to whole tract faeces. The difference was the portion of nutrients that microbes that mostly populate the large intestine use up. Our test diets were prepared by mixing either 40per cent of each

of the canola meal or soybean meal with a wheat-barley diet. A protein-free corn starch-based diet was also fed to pigs to correct for gut protein secretions. The 8 mash diets were fed to each of 8 pigs for 8 periods. Each 9-day period involved 5 days of adaptation to each diet, followed by 2 days of faeces collection and subsequently 2 days of digesta collection through the T-cannula.

What we found

Among the 5 canola meal samples, protein content ranged from 35.7 to 41.3per cent (Figure 1), indicating that canola meal differed somewhat in nutritive value among crushing plants in Western Canada. The 5 canola meal samples averaged 2.1per cent lysine with 95per cent of it being chemically-available lysine. This high availability of lysine indicated that heating during processing did not cause much protein damage. Compared with soybean meal, the 5 canola meal samples contained less protein but more fibre that made canola meal more difficult to digest. Soybean seed is typically cracked and dehulled reducing its fibre content thus not a fair comparison to canola meal. Canola seed is not dehulled before pressing due to the small seed size and tight adhesion between the cotyledons and hull. As a result, the 5

CONTINUED ON PAGE 26

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Figure 3. Digestible energy and predicted net energy (what pigs actually utilized) values of 5 canola meal samples compared with soybean meal and table values from American (NRC) and European (INRA) databases for growing pigs (as fed basis).

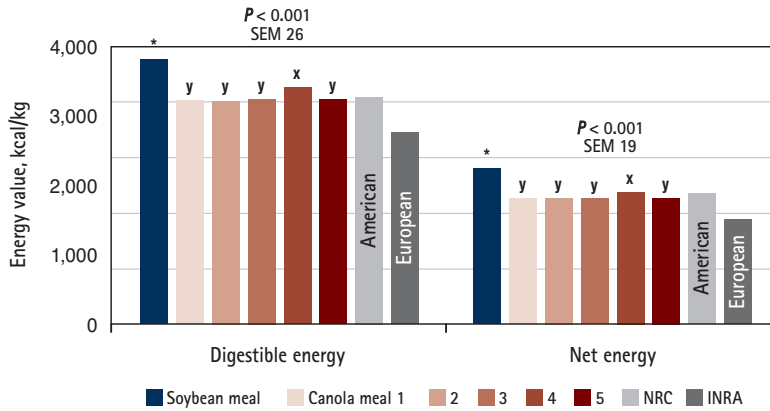
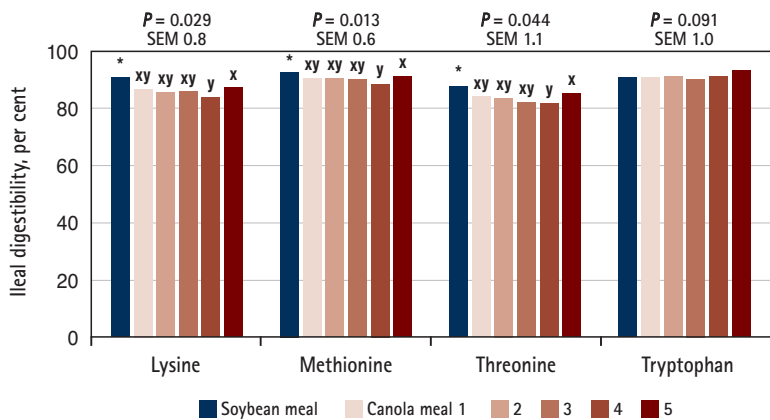


Figure 4. Ileal digestibility of amino acids (corrected for pig small intestine secretions) of 5 canola meal samples compared with soybean meal.



canola meal samples had lower energy digestibility than soybean meal (Figure 2). Due to variation in protein, fibre and fat content in canola meal samples, the total tract digestibility of energy fluctuated, but only within a 2per cent range. As a result, digestible energy (DE) and predicted net energy

(NE, which is corrected by deducting energy losses in urine and dissipating heat, and deemed utilized by the pigs) in canola meal fluctuated slightly (Figure 3). The predicted NE value of the 5 canola meal samples was close to the NE value listed in an American database (NRC 2012), but greater than the NE value for European meal listed in a French database (INRA, French National Institute for Agricultural Research). Choosing the correct energy value for canola meal is very important for obtaining predictable growth performance and getting pigs to market weight on time.

The 5 canola meal samples had lower digestibility of most essential amino acids, the building blocks of protein, compared with soybean meal (Figure 4). But among the 5 canola meal samples, the difference was small. For example, digestibility ranged from 84.1 to 87.5per cent for lysine, 81.8 to 85.6per cent for threonine, and 88.9 to 91.6per cent for methionine. Content of these 3 amino acids is the most nutritionally relevant to pigs.

Finally, total glucosinolates content in the 5 canola meal samples ranged from 1.2 to 7.6 µmol/g. That was certainly low and not much to worry about considering that when rapeseed was first genetically modified, it had to be below 35 µmol/g to be termed ‘canola meal’. Canola breeders have evidently done a great job reducing the glucosinolates content of canola over several decades. The variation in total glucosinolates content among our 5 canola meal samples could be due to differences in seed variety or processing factors like variation in temperature, moisture and exposure time among crushing plants.

Conclusions and implications

Nutrient composition, especially protein and fibre varied somewhat in canola meal samples from Western Canada. This finding suggests that monitoring protein and fibre content of canola meal is important because both directly relate to digestible amino acid content and the energy value of canola meal. Variation in fat content would be important, but it was too low in canola meal. Low fat content is because the seed oil is first pressed out and remaining oil thereafter is removed by washing it with a solvent. Based on the findings from the present experiment, we suggest using the table value from NRC (2012) for net energy in canola meal rather than European values. We also suggest using NRC (2012) digestibility coefficients for amino acids to formulate diets for pigs in Canada.

Acknowledgements

We thank Agriculture and Agri-Food Canada and the Canola Council of Canada for funding this research work. ■





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Recherche sur la nutrition des porcelets : étancher la soif de connaissances

Submitted by Swine Innovation Porc

Qu'est-ce que les bambins et les porcelets ont en commun? À part une certaine tendance à briser les choses, tous les deux doivent recevoir une alimentation adéquate pour leur assurer un bon départ dans la vie. Les chercheurs sont bien au fait de ce besoin des porcelets, ce qui les a amenés à effectuer d'importantes recherches sur les soins et l'alimentation à leur fournir. Que ce soit les prétraitements, les probiotiques ou les rations postsevrage, les scientifiques

ont minutieusement examiné cet aspect fondamental de la production porcine et ils ont obtenu des résultats prometteurs à plusieurs égards.

Nutrition des nouveau-nés

Même s'ils sont petits, les micronutriments jouent un grand rôle dans le développement des porcelets. Ils constituent des éléments essentiels nécessaires en petites quantités tout au long de la vie pour soutenir certaines fonc-

tions physiologiques et ainsi maintenir la santé. Dans le projet de recherche « *Nutriments ayant une valeur additionnelle pour les nouveau-nés : oligoéléments et biofacteurs* », les chercheurs se sont penchés sur trois oligoéléments essentiels qui sont transférés des truies aux porcelets avant et après la naissance : la vitamine A, la vitamine D et le cuivre.

Dans le passé, les porcelets nouveau-nés recevaient ces oligoéléments de façon naturelle à partir des rayons ultraviolets, des plantes et du sol. Mais, ces trois sources ne sont guère accessibles dans un bâtiment porcin moderne. C'est ce qui a amené les chercheurs à analyser les meilleures façons de fournir ces trois oligoéléments essentiels, soit directement aux porcelets ou indirectement par le biais de la ration des truies.

L'étude a permis de constater que le plus efficace était d'administrer les oligoéléments par voie orale aux porcelets âgés de 2 jours et de 8 jours, en combinaison avec une exposition aux rayons UVB un jour sur deux, pendant la lactation. Ajouter des oligoéléments aux rations des truies s'est aussi avéré bénéfique pour les porcelets. Cette pratique a en effet permis d'améliorer l'uniformité des poids des porcelets à la naissance et leur microflore.

Lors de l'étape suivante, les chercheurs utiliseront ces résultats pour déterminer les quantités et les façons optimales d'ajouter les oligoéléments dans les rations. Savoir combien, quand et comment fournir un supplément à vos animaux peut permettre d'obtenir le meilleur rendement moyennant un investissement minimal, ce que tout producteur saura apprécier.



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8:00 – 9:00 am	Registrations, Coffee & Booth Visits	60 Min
9:00 – 9:05 am	Introductions & Welcome	5 Min
9:05 – 9:20 am	PED in Alberta <i>Dr. Julia Keenlside, Alberta Government</i>	15 Min
9:20 – 10:00 am	Activism and Preventative Measures <i>Larry Wallace, Ag & Food Exchange</i>	40 Min
10:00 – 10:25 am	Refreshment Break & Booth Introductions	25 Min
10:25 – 10:55 am	Mycotoxins in Western Canadian Diets <i>Dr. Dan Columbus, Prairie Swine Centre</i>	30 Min
10:55 – 11:35 am	Stockmanship and Animal Handling <i>Kevin Brooks, Olymel</i>	40 Min
11:35 – 12:15 pm	New Technologies <i>Tom Stein</i>	40 Min
12:15 – 1:15 pm	Lunch Break & Booth Introductions	60 Min
1:15 – 1:45 pm	Colostrum and Early Care Management <i>Dr. Egan Brockhoff, Prairie Swine Health Services</i>	30 Min
1:45 – 2:15 pm	Sow Welfare <i>Dr. Yolande Seddon, University of Saskatchewan</i>	30 Min
2:15 – 2:40 pm	Refreshment Break	25 Min
2:40 – 3:10 pm	Wild Hogs in Alberta <i>Perry Abramenko, Alberta Government</i>	30 Min
3:10 – 3:25 pm	African Swine Fever <i>Dr. Egan Brockhoff, Prairie Swine Health Services</i>	15 Min
3:25 – 3:55 pm	Closing Comments & Wrap-up	30 Min

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Parce qu'il soutient le développement des intestins du porcelet, le FCE, qui est produit naturellement dans le lait de la truie, est vital. Toutefois, le FCE produit chimiquement s'avère trop coûteux pour être utilisé à la ferme. Les chercheurs ont donc créé, durant cette recherche, un supplément de FCE plus économique. Dans le cadre d'essais avec des porcelets, ils ont constaté que ce supplément de FCE peut améliorer le développement des intestins des porcelets et favoriser leur croissance, le gain de poids et leur efficacité alimentaire.

Ils ont également noté que lorsque les dosages augmentaient, les bénéfices croissaient également. Bien que ce supplément de FCE ne soit pas encore disponible, ces résultats laissent entrevoir son grand potentiel pour aider à maximiser le

CONTINUED ON PAGE 30



Station permettant d'exposer les porcelets à des rayons UV (gauche). Dosimètre pour les rayons UVB (droite). Photos : AAC Centre de la recherche et du développement de Sherbrooke

Facteur de croissance épidermique

Pour un porc ou un cheval de course, se démarquer dès le départ peut faire toute la différence. Aussi, les chercheurs font tout ce qu'ils peuvent pour donner une longueur d'avance aux porcelets. C'est particulièrement important de nos jours car les producteurs sèvrant les porcelets plus tôt. Cette pratique réduit la quantité de lait, et par le fait même de facteur de croissance épidermique (FCE), que les porcelets consomment, ralentissant ainsi leur croissance et leur développement.

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développement du porcelet. Et l'étude en elle-même constitue un autre exemple de recherche visant la mise au point de solutions rentables et pratiques aux problèmes des producteurs les plus pressants.

Nutrition postsevrage

Exploiter de manière optimale le potentiel de croissance des jeunes porcelets s'avère essentiel, et la nutrition postsevrage joue un rôle énorme à cet égard. Les améliorations apportées par la nutrition postsevrage doivent toutefois demeurer rentable pour les producteurs, et c'est ce que les chercheurs visaient avec le projet « *Stratégies nutritionnelles à faible coût en postsevrage - Prétraitement des ingrédients pour en améliorer la valeur.* »

Cette étude était basée sur le fait que l'utilisation de céréales à faible teneur en humidité et acidifiées améliore la prise alimentaire, la digestibilité et la croissance chez les porcelets sevrés. À partir de cette information, les chercheurs se sont demandé s'ils pouvaient obtenir les mêmes résultats en acidifiant des céréales à forte teneur en humidité.

Bien qu'il faille plus de recherche à ce sujet, les résultats préliminaires suggèrent que de nourrir les porcelets nouvellement



Ajout d'acide lactique à des grains humides à l'Université de la Saskatchewan. Photos : Université du Manitoba

sevrés avec du blé conservé grâce à l'acidification améliore effectivement l'efficacité alimentaire. De plus, cette amélioration est comparable aux gains réalisés grâce à l'acidification directe des rations.

Comme les coûts d'alimentation représentent de loin la dépense la plus importante, l'efficacité alimentaire, sans être le seul facteur à considérer, pourrait faire la différence entre une ferme rentable et une en difficulté financière.

Postsevrage : rations simples et complexes

Il est rare qu'en production porcine, on puisse régler des problèmes à l'aide de solutions simples. Mais cette fois, la réduction du coût des rations en postsevrage pourrait bien s'avérer une exception. Au fil des années, ces rations sont devenues plus complexes et, ce faisant, plus coûteuses. Se pourrait-il qu'il puisse en être autrement? En recherche, il faut commencer par poser la bonne question, et dans ce cas-ci, les réponses obtenues sont fort intéressantes.

Après avoir testé des rations de grandes et faibles complexités dans des fermes de différents statuts sanitaires, tel que prévu, les porcelets ayant reçu une ration à base de soya moins coûteuse ont connu un départ médiocre et une croissance limitée. Cependant, vers la fin de la phase de pouponnière, ces porcelets ont réussi à rejoindre ceux qui avaient reçu une alimentation plus complexe. Mais surtout, les deux groupes de porcelets semblaient identiques une fois sur le marché et l'évaluation de leurs carcasses était essentiellement pareille.

Pour les producteurs aux prises avec des coûts d'alimentation toujours plus élevés, ces résultats s'avèrent prometteurs. S'ils pouvaient fournir en postsevrage des rations moins coûteuses sans sacrifier la croissance, ils pourraient ainsi atteindre le Saint-Graal de la production porcine, soit le meilleur des deux mondes.

CONTINUED ON PAGE 33

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Diarrhée postsevrage

Chacun de nous sait bien qu'avoir la diarrhée rend bien moins productif : aussi, on se doute bien que c'est la même chose pour les porcs. Même le meilleur programme alimentaire ne peut donner de bons résultats lorsque surgissent des problèmes intestinaux. Dans le passé, de petites quantités d'antibiotiques étaient ajoutées aux rations pour combattre la diarrhée post-sevrage. Mais étant donné les préoccupations actuelles soulevées par l'utilisation des antibiotiques, les scientifiques se sont mis à la recherche d'une alternative et l'ont trouvée sous la forme d'additifs alimentaires.

Plus précisément, ils ont analysé trois types de prébiotiques et un sel d'acide organique dans les aliments servis en pouponnière. Bien que l'ajout de prébiotiques ait permis d'améliorer la digestibilité, cela a eu peu d'effet sur la croissance du porcelet. En revanche, l'acide organique s'est révélé être plus qu'avantageux. Non seulement il a favorisé la digestibilité de la matière sèche, de la protéine brute et de l'énergie brute, mais il a également amélioré trois éléments essentiels de la production porcine : l'efficacité alimentaire, le gain moyen quotidien et le poids.

Les études comme celle-ci mettent vraiment en valeur le pouvoir de la recherche, puisque que c'est seulement dans le cadre d'essais contrôlés qu'il est possible d'identifier quels ad-

ditifs fonctionneront ou non pour contrer la diarrhée. C'est une bonne nouvelle pour les producteurs, puisque cela leur évite de perdre du temps et de l'argent en procédant par essai-erreur. De plus, puisque ces résultats devraient permettre de réduire la prévalence de diarrhée à la ferme, c'est aussi rassurant pour les porcs.

Quel que soit leur stade de développement, nourrir les porcelets avec les aliments les plus adéquats au coût le plus faible constitue un gage de succès. Alors que chaque projet de recherche permet d'étudier chaque problématique à partir d'un angle différent, tous les projets partagent un principe commun : lorsque les chercheurs obtiennent de bons résultats, les producteurs sont gagnants. ■

Pour obtenir plus information sur les sujets abordés dans cet article, veuillez contacter : Nutrition des nouveau-nés : Jacques Matte, chercheur (jacques.matte2@canada.ca)

FCE : Julang Li, chercheur (jli@uoguelph.ca)

Nutrition postsevrage : Denise Beaulieu, chercheuse (denise.beaulieu@usask.ca)

Rations simples vs complexes en postsevrage : Vahab Farzan, chercheur (afarzan@uoguelph.ca)

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Pork Belly technology that's made to measure

By Geoff Geddes, for Swine Innovation Porc

If you've ever seen a "work of art" that looked like a paint can exploded, yet it sold for a million dollars, you know that measuring quality is a tricky thing. That's especially true in the pork industry, where in spite of pork belly prices rising over the last few years due to high consumer demand, belly quality is still measured using subjective and time-consuming manual methods. As it turns out, it may be a hard problem with a soft solution.

"Based on years of research and the latest findings in pork belly softness, we sought to develop an instrument that could lead to an automated system for belly classification," said Dr. Bethany Uttaro, Research Scientist, Meat Quality - Applied Bio-instrumentation with Agriculture and Agri-Food Canada (AAFC).

The current approach in the plant is for staff to pick up the ribless or rib-free belly and assess its firmness or softness. If that can be changed to an objective method, it would save wear and tear on the people lifting those bellies repeatedly, reduce mistakes and possibly save on labour costs.



Assessing pork belly quality. Photo: AAFC

Two minutes is too long

Prior to this project, research on alternative approaches involved testing belly firmness by bending it over a bar, skin-side down, letting it drop for two minutes and then measuring how much it dropped. While this may have worked as a research tool, it was impractical for a plant environment because, as Uttaro put it, "you don't have two minutes to figure things out".

As is often the case in research, the road to a solution began with a simple statement: There has to be a better way. Thus began a series of tests by Uttaro and her team - using cameras

and a short conveyor that could be adjusted to different angles - to determine the optimal angle for the plant conveyor belt.

"It came down to a combination of the ability to manage the belly on the conveyor and what the bend was telling us about firmness of the fat and lean."

Another common theme for research is that answers often come when you least expect them, and this project was no exception.


Let the bellies fall where they may

"I was presenting our findings at a project meeting and someone said maybe we should just use the bar at the end of the belt for sorting bellies. The really soft ones would fall between the end of the conveyor and the bar, while the firm ones would go over the bar. Instead of employing cameras and electric eyes, why don't we just use gravity?"

Following this "a-ha" moment (or what Uttaro called her "duh" moment), researchers had the existing equipment modified so it would lie flat. This allowed them to evaluate its potential use for classifying pork rib-in bellies based on objective softness traits. Different settings for accuracy and speed were tested using 400 bellies from commercial pigs, and another 450-500 bellies will be used to test the accuracy of the prototype.



CONTINUED ON PAGE 36

An aerial photograph of a rural landscape, likely a farm, overlaid with a green radar-like grid. The map shows various fields in shades of green, yellow, and red, with some white lines indicating roads or boundaries. The text is superimposed on the top half of the image.

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“With this new system, firm bellies will traverse the gap between two conveyors to go for further sorting. Meanwhile, the soft ones will drop to a third conveyor below and be taken off there.”

No separation anxiety

In this way, the plant can easily separate bellies that are unsuitable for bacon production and send them elsewhere. Those deemed “bacon worthy” can be further sorted for their fit with certain markets.

Preliminary tests have shown potential for the development of an automated commercial system.

“It would be very useful for the plant to be able to sort bellies early on, consistently and with little effort, freeing up another person further down the line. If there are some bellies that are suitable for the Japanese market and thus more valuable to the plant, they can be pulled out of the line as they must be ribbed differently than those bound for North American markets.”

If all goes well, perhaps a future project could examine why people spend millions of dollars for “exploding paint can art”. Then again, some things just defy explanation. ■

For more information on this project, please contact

Dr. Bethany Uttaro:

Email: Bethany.Uttaro@AGR.GC.CA

Phone: 403-782-8107, Ext. 8590

Researchers have a ball helping pigs play

By Geoff Geddes, for Swine Innovation Porc



Pigs at play. Photos: Canadian Centre for Swine Improvement

In theory, entertaining pigs should be easy: Put Charlotte’s Web and Babe on the big screen and break out the popcorn. But with animals that are short on attention and big on destruction, it’s never that simple. In light of revisions to the Code of Practice for the Care and Handling of Pigs, enrichment as a means of enhancing animal welfare is a higher priority than ever before. That explains the greater emphasis on enrichment in recent research like “Use of accelerometers to automatically assess pig behaviour and welfare”.

“Our initial focus was trying to improve and simplify the gathering of data on how pigs relate to enrichment objects in their pen,” said Dr. Jean-Paul Laforest, Assistant to the Vice-President - Human Resources at Laval University.

Lights, camera, observation!

As many researchers (and unfortunate grad students) can attest, the use of live or video observation to measure behaviour and welfare in animals is time consuming and often subject to human error. By inserting an accelerometer – a device that automatically measures physical acceleration of an object – in various items placed in pens, Dr. Laforest hoped to validate the use of this tool to investigate pig behaviour as they interact with their environment.

While technical issues prevented them from properly evaluating the accelerometer, they did gather some important insights on enrichment behavior.

“We had some notable findings around how often animals interact with objects and for how long. For example, they played frequently with a ball, yet only for short periods each time. This may be due to their inability to grasp or manipulate it with their mouth.”

Destruction distraction

In contrast, a short piece of wood was used less often but for longer durations. The patterns of use led researchers to conclude that objects which can be easily manipulated or partly destroyed



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(like when little pieces of wood break off) tend to stimulate pigs more and keep them engaged longer.

“We tried varying the placement of the objects (suspended from the ceiling versus on the floor) and made them both movable and immovable, but these factors had little influence. It came down to the characteristics of the object itself in determining the level of interest.”

Even cleaning the object regularly - something that was tested in the second part of the project - had no discernible impact on how pigs interacted with it.

One thing that surprised Dr. Laforest and his colleagues was how quickly pigs became bored with enrichment items.

Broken engagement

“We thought we would start seeing a lessening of engagement in 3-4 days, but after a few hours they were already showing disinterest. The one exception was that the piece of wood kept their attention right through the experiment. There may be something in the smell or taste of the wood that attracts the animals, or just the fact that it can be destroyed.”

As producers digest the revised code and its implications, this study offers some food for thought.

“There’s a lot of focus now on whether we should have different objects to stimulate animals, and this project showed that not all toys are equal; some



are more appealing than others. Also, since interest declines quite rapidly, we will have to find ways of changing or alternating the objects to hold their attention. It’s fine to say we should do this or that to enrich animals, but if you put measures in place that have little effect, there’s not much point. All of this will have to be taken into account by industry: what enrichment we are doing, how often, what type and for how long. I don’t think we have all the answers yet.”

And as you weigh your options for pig enrichment, avoiding movies and popcorn is a good place to start. ■

For more information on this project, please contact:

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Phone: 418-656-2131 ext. 4034



Some of the types of enrichment objects used in the study. Photos: Canadian Centre for Swine Improvement

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Feed research has finger on the pulses

By Geoff Geddes, for Swine Innovation Porc

Just as a pulse is pretty important for humans, pulse grains can play a role in keeping your business alive and kicking. As feed prices continue to rise, the pork industry seeks new and creative ways to cut costs without cutting quality. That effort prompted a closer look at pulses as an option for feed ingredients.

Though farmers usually grow pulse crops like field peas, faba beans and lentils for human consumption, they sometimes become available at a reasonable cost for animal feed due to an export market collapse or downgrade in quality. Since less is known about some key aspects of pulses compared to other crops, research set out to change that.

“This project came about because, in spite of the array of pulse grains available in Western Canada, we don’t have enough information on their nutritional value and potential inclusion rate in swine diets,” said Dr. Ruurd Zijlstra, Professor and Chair in the Department of Agricultural, Food and Nutritional Science at the University of Alberta.

Energy crisis

A key focus of the research was characterizing the digestibility of nutrients in pulse grains. While pulses have significant amounts of starch and protein, the starch in pulses has a different composition than starch in cereals. As a result, starch from pulses is not well and quickly digested in the small intestine of pigs. Though it provides energy, it does so at a slower rate, and this difference requires clarification.

“If you just look at the total amount of starch in the diet, you can overestimate the amount of energy provided by pulse grains. We formulate swine feed to optimize the ratio of energy to amino acids, so if the energy level is incorrect, that ratio will also be wrong, and we need to get it right. It’s vital to predict net energy accurately when creating diets to maximize the nutritional value for your pigs.”

For more information on this research, please contact: Dr. Ruurd Zijlstra Email: ruurd.zijlstra@ualberta.ca Phone: 780-492-8593

Picking the proper pulse

Researchers found that not all pulse grains perform the same when it comes to starch digestion; for example, field peas rate better in that regard than faba beans. As that’s not something normally seen in pig nutrient tables, it’s added information for producers in making critical feed choices.

To further analyze digestion, laser scanning was adopted for production of 3-D images of the digestive structure. The results, which included a finding that application of heat and steam could boost starch digestion, will lay the groundwork for future research. In the meantime, though, this project could have implications for current practices in diet formulation.

Staying flexible

“The outcome of our work fits a pattern of research showing that overall, we are underestimating how

flexible pigs can be in the diets they are willing to consume. They are far more flexible than we thought 10 or 20 years ago. The more we can have pigs consuming ingredients that don’t reach human feed markets and convert those ingredients into a high quality animal protein like pork, the better off we’ll be as an industry and a society.”

On the subject of inclusion levels, Dr. Zijlstra and his team gleaned more information that could pique producer interest.

“We use pulse grains in phase three nursery diets soon after weaning. It’s amazing how much soybean meal you could remove from these diets and still end up with good pig growth by upping the pulse level. When soybean meal increases in price, as it’s bound to do, and pulse grains are available at a decent cost, they are a practical alternative ingredient to consider.”

By getting the full picture of what to use and how to use it, research can help producers reap the maximum benefits from pulse grains without missing a beat. ■

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YOUR DAILY BACON

BY BUDDY SIMMONS

You know, Your Daily Bacon spends a lot of time sniffing out pig tales on the internet. Usually a theme is chosen and then we run with it. We've covered a lot of territory over the years, and one of the most fertile grounds has been history. So we are dipping back into time again to share a few interesting things that slipped by us previously.

We discovered that Bath, England's reputation for its curative waters owes that reputation to none other than pigs. Sure, the Romans constructed bath-houses there, the ruins remain to this day, but it was pigs that drew the attention to the place. Or so the legend goes, the story is generally taken with a grain of bath-salts.

According to the story, Bladud, king of the Britons, was sent by his father to Athens, Greece to study. You need a good education to be king, after-all. And

Bladud was getting pretty good grades. But, in a stroke of misfortune, likely only second to his parents deciding to name him "Bladud", he caught leprosy.

That affliction did not bode well for becoming a king back in those days, though it may have been a really good incentive for coming up with health plans quickly. But medical advances being what they were back then, Bladud pretty much had to give up on his career as a monarch and get demoted to tending pigs.

Which still was not the best of employment decisions he could have made. The pigs caught leprosy from Bladud, adding insult to injury. Bladud probably was ready to throw in the towel at that point.

For the pigs, however, it was business as usual. Mainly in the form of eating, making new pigs and rolling around in the hot-spring heated mudbath. Bladud noticed that the pigs did not suffer from

any skin afflictions common at that time, and appeared to be cured of their leprosy after the mud treatment. No doubt he thought, "Hey, I was the heir to the throne and now I have leprosy and tend pigs, what do I have to lose?" and gave himself the very same spa mud-bath treatment. And it worked! He was cured of his affliction, returned to royalty, founded the city of Bath so others



It may be a bit early for this one, but EVERY season 'tis the season to enjoy bacon!

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could be cured, and probably did a lot of important things we did not bother to look up for this tale.

Given that there is no historical evidence that Bladud even existed, historians consider this all to be complete hogwash.

Next up – and we can't believe we are reporting this one – Pig Toilets.



See? We told you pig toilets was once a thing.

No, not toilets made for pigs, (although we've heard they can be toilet trained) but pigs as a method of waste disposal.

Sewage disposal was quite the dilemma in days of yore, and the

solutions were not always methods that would be endorsed by today's health departments. In Europe, the solution often amounted to not much more than emptying the chamberpots out onto the streets. You really had to watch your step in those days, though I hear it's nearly as bad in Paris these days, thanks to irresponsible and plentiful dog owners.

Anyway, The Chinese had a better idea – “better” being a relative term, we suppose. Latrines were positioned above hog pens, oriented right over the food troughs. Hogs then were apparently even less fussy than they are in modern times, and the waste was taken care of in the manner you might expect.

The practice dates back at least to the Han dynasty (206 BC-220 AD). And in some remote areas in China, as of 2005, pig toilets still exist. As an added Your Daily Bacon bonus, we include a photo of an example of a pig toilet.

As you also would also expect, this is not exactly a healthy practice and caused health issues and so has been discouraged by the Chinese government for obvious reasons. But hey... in the old days, you may have contracted parasites and cholera



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from consuming porcine latrine attendants, but at least your shoes were clean!

Sewage disposal was not the only pig-related ingenuity employed by China. Pigs helped advance oral hygiene. This is not so bad as the previous business. Pig bristles were simply incorporated to create tooth-brushes, not a huge leap of reasoning for the days before modern plastics. And after all, this was something used in other countries like the U.S. if you think about it, bristles generally had to come from an animal source, pretty much.

In fact, in the U.S., pig-bristles were considered to be a bit coarse and harsh on the gums and so horse-hair was substituted. Animal hair was used for this purpose until the 30s with the invention of nylon, So on the yuck-scale, this falls pretty low.

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Pork Culture and Trends

And we feel that this must be pretty well documented dental technology, so we are not brushing this one off as a possible myth.

Did you know that pigs were used as foot-soldiers (hoof-soldiers) in ancient wars?

Well, it would seem that they were.

Before tanks, bomber jets, and really nasty bombs were invented, elephants were used as war-machines in areas where elephants were available. And they made pretty efficient weapons of destruction for the time. They could stomp right through front lines, could use their trunks to put the smack-down on enemies, and they held up pretty well to the comparatively puny weapons of the era.

Pliny the Elder (23 AD- 79 AD) told of the efficiency of elephants in warfare. But he also told of a weakness the elephants had. According to Pliny, elephants were very frightened by the squeals of pigs. We'll have to take him on his word on that – we lack the budget for field testing.

But here is the kicker. When Macedonia was besieging Megara, a town in West Attica, Greece, the resident defending



Amazing culinary feat #2: The only thing that could make this better would be to stuff it with Amazing culinary feat #1.

army needed to figure out a way to break the Macedonian army's ranks.

Apparently one astute general thought it over and decided, "Hmm. If squealing pigs drive elephants crazy, imagine what chaos squealing, FLAMING pigs would cause!"

It worked as planned. They oiled up the kamikaze porkers and lit them up for the attack. Understandably, the flaming pigs squealed a lot more than usual as they were driven into the Macedonian's front line. The elephants went nuts, and didn't really care which side they trampled and since the Macedonians were nearby they found their weapons of mass destruction upon them instead of their intended targets.

While we were unable to determine what the final outcome of the battle was, there is one thing we are fairly certain of – whichever side was victorious, a pork barbecue was likely the celebratory meal. With a side order of elephant, of course.

And that's all for this edition of YDB, hopefully you found it of interest. As usual, we are sprinkling in a few memes and unusual bacon products to sweeten the pot.

CONTINUED ON PAGE 45



Amazing culinary feat #1: No witty comment. This left us speechless. And drooling.

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There is a looming feeling that one or two of the memes may be repeats, but luckily, bacon is just as delicious the second time around.

Which leads me to add a final, personal note. It is with no small sense of sadness that I have to announce that this is the final installment of Your Daily bacon. Circumstances predicate that it is time for me to bid adieu.

It is my sincere hope that my goofy (and often strange) looks at the role of pigs, pork, – and especially bacon – in pop culture and history has been a source of amusement for readers of the publication you hold in your hands.



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For us, being just two steps away from bacon makes us kind of twitchy.

It amazes me that every time that I thought the well had to be dry, that there was nothing left of interest to report on in regard to the topics I wrote about, I'd hit the internet and find some fresh memes, new bacon related products and pork-culture related events of past and present. I took pride in this and was happy with the thought that I may have put a smile on some faces and maybe invoked a chuckle or two.

But nothing lasts forever, and Your Daily Bacon is no exception. I began this feature with the Summer 2013 issue, back when the magazine was still the Western Hog Journal, and it was a fun ride and a bit educational for me, to be honest.

My thanks go to Canadian Hog Journal for accepting my frivolous musings, and especially to Sheri Monk, who set me on the path. And thanks go to to any and all who enjoyed walking down that path along with me.

Good thoughts to you all, and remember – keep that bacon sizzling! ■

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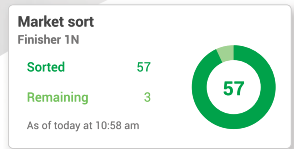
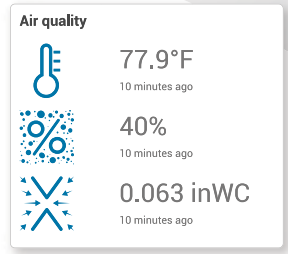
Production management system



PROSORT
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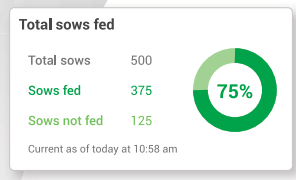


Autosort management system



Overview

- Alarms
- Notifications
- Ventilation
- Feeding
- Sorting



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