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## Cover Photo

Sows in a straw bedded free access stall system in Demark - see Herning Congress report from Stuart Lumb and Jane Jordan (photo courtesy Danish Agriculture and Food Council)



# Precision Feeding

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## Editor's Notes

In October, the Danish industry announced an ambitious plan to finish 2 million more pigs a year, by reducing the number of feeder pigs that are sold to German finisher farms. The agreement between producers, processors and food industry workers is aimed at creating more value for all partners. Processing plants are running under capacity and could handle a lot more pigs. Increasing throughput will reduce slaughtering and processing costs, while the additional pork will be targeted at high value markets, particularly in the Far East. The plan is a win-win for all concerned.

Like many pork industries around the world, Danish producers have had a tough time over the last five years, with volatile feed prices, unfriendly banks and poor pig prices. In addition they have to meet tough environmental and animal welfare regulations, which add to their production cost. The only way they can survive is to be highly efficient technically and to create more value in their 'pork chain.'

Contrast this with the situation in Canada, where there has been an antagonistic relationship between producers and processors, where there is a lack of communication and understanding between the participants in the pork chain and where there is almost no relationship between retailers and producers. Despite the fact that both processors and the production sector have faced the challenge of a high dollar, the two sectors have not worked together to overcome this handicap. Processors have failed to understand that producers cannot survive in the economic environment they have faced over the last five years. With production businesses across western Canada failing due to massive feed price increases, they have now been forced to purchase production capacity, in one form or another, in order to secure their supply. This doesn't change the economic reality for producers, or indeed processors. The only way forward is to create more value in the pork chain and get some of that value back to producers, just like the Danes have done. Sadly, unlike the Danes we have no "industry", just a collection of independent businesses and organizations, all fighting their own corner. But, if the various sectors of the pork chain don't cooperate and work towards a sustainable future for the production sector, we will see the industry continue to decline. It's time to start talking! ■

*Bonnie Peck*

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# News and Views

## Masterfeeds and Ridley merging Canadian feed businesses

Feed companies Masterfeeds Inc. and Ridley Inc. announced in October an agreement that will merge their respective commercial livestock and poultry feed and nutrition businesses in Canada into a new entity called Masterfeeds LP.

The combination of Masterfeeds and Ridley's Canadian feed business, which operates as Feed-Rite, will create the second largest feed company in Canada. The new company will operate, among other things, 22 feed manufacturing plants and employ over 500 people in a business spanning across Quebec, Ontario and the Prairie Provinces. Masterfeeds LP will be headquartered in London, Ontario and led by current Masterfeeds Inc. Chief Executive Officer, Rob Flack, according to a company news release.

"As Canadian meat, milk and egg producers have become fewer, larger and ever more sophisticated, it has been obvious for some time that the feed industry in Canada would benefit from a similar transformation," says Flack. "As the feed industry evolves, we expect there to be more opportunities for Masterfeeds LP to grow in the future."

## Banff Pork Seminar 2013 targets The Challenge of Change

The upcoming 2013 Banff Pork Seminar, being held Jan. 15 to 17, 2013 has chosen the theme of "The Challenge of Change." Against a backdrop of major pork industry pressures and changes the Seminar has brought in leading speakers to discuss the key areas of challenge for producers and their industry.

"The biggest change the industry faces this year is the massive increase in feed costs," says Dr. Ruurd Zijlstra, of the University of Alberta, Banff Pork Seminar Program Director. "The other major one is pig prices. The first speakers

at the Wednesday plenary session are two large successful companies who will speak on these factors in the context of how they measure success in their operations."

Jason Logsdon is CEO of The Maschhoffs, one of the largest family owned production networks in North America. That company partners with more than 400 family farmers across the US Midwest and produces enough pork to feed 10 million consumers annually. He'll speak on "Performance metrics in a high growth environment."

### "Another front where the industry faces the challenge of change is in dealing with animal welfare activism"

Steve Pollmann is president of Murphy-Brown's Western Operations, including 150 company owned farms and approximately 500 contract producer farmers. It is the world's largest producer of pork products. He'll speak on "True measures of successful pork production."

Another front where the industry faces the challenge of change is in dealing with

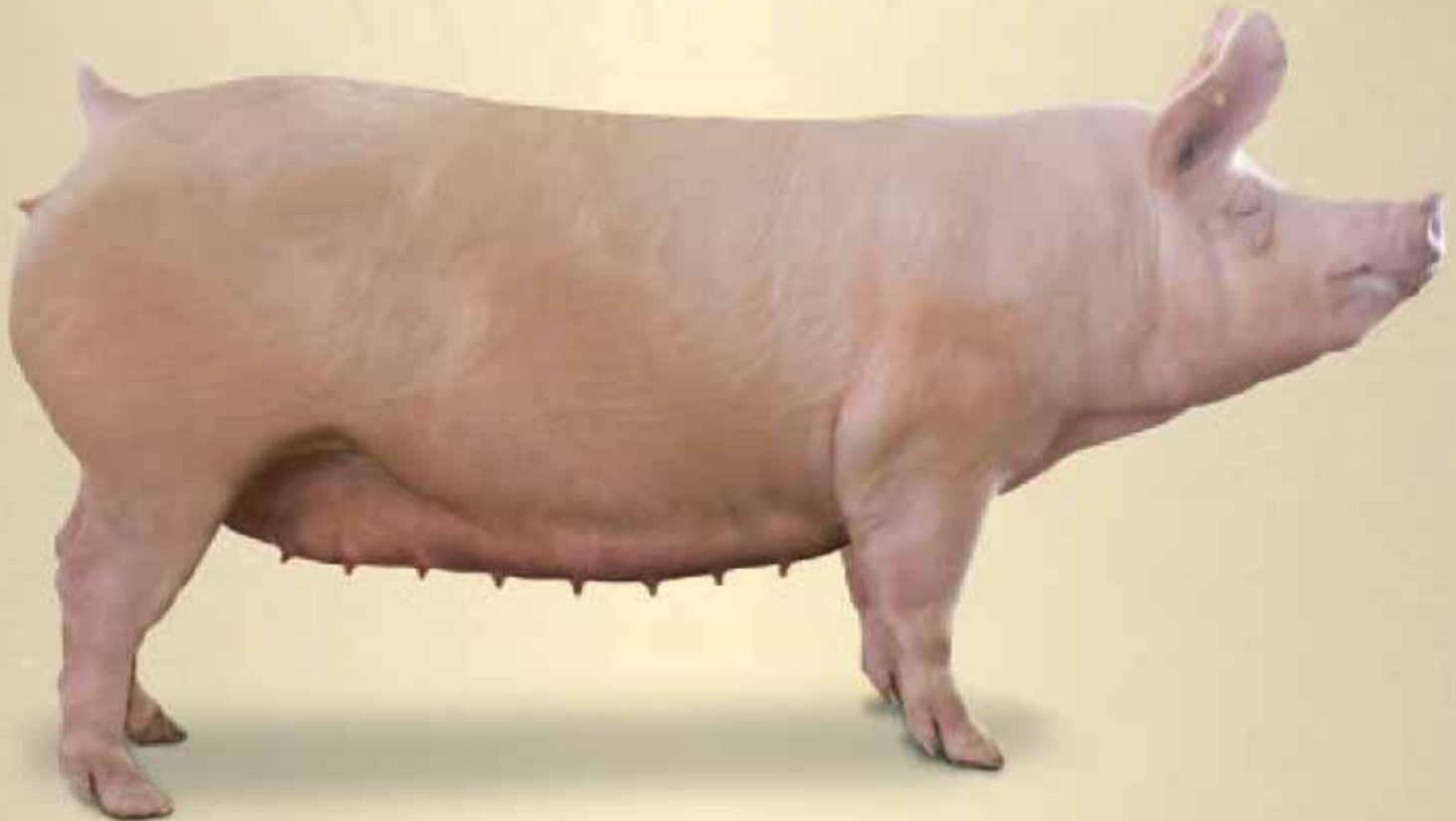
animal welfare activism and related public relations scrutiny. The Thursday morning plenary session is entitled "New Partnerships" and brings together two speakers to talk about this challenge and how to form better partnerships in the value chain. A producer leader from the United Egg Producers will tell about how bitter adversaries, the United Egg Producers and the Humane Society of the United States (HSUS) forged a compromise that hatched an innovative plan to change the egg business in that country. Dr. Wes Jamison, associate professor of public relations at Palm Beach Atlantic University, will address "Advocating for our future."

Some of the most practical advice comes from the popular breakout sessions. Attendees can pick from these 11 sessions which feature top speakers from across North America and overseas. They include sessions on the latest in swine nutrition, competing for markets at home and abroad, and building competitive pork production. Other sessions include unlocking genetic potential, and why healthy pigs mean healthy profits.

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Registration, accommodation and full program information is available on the Seminar website at [www.banffpork.ca](http://www.banffpork.ca). More information is also available by contacting Ruth Ball at (780) 492-3651, or by email at [info@banffpork.ca](mailto:info@banffpork.ca).

### New scanning technology helps to reduce bacterial contamination

A new technology being introduced into the Canadian food processing industry may offer help in the battle to provide less cross contamination with harmful bacteria. Called Bactiscan, it is a portable light source that can be used to scan food processing equipment surfaces and show instantly areas where cleaning was not effective. Once unclean locations are identified, thorough analysis and control procedures can be implemented and the areas cleaned properly.

The product is marketed by Easytesters, an international technology company with several food processing equipment testing products on the market and whose Canadian operation is based in Calgary, Alta.

“The technology uses light in various wavebands which cause unclean surfaces to fluoresce somewhat,” says Easytesters spokesperson, Bob Holland. “Viewed in a near dark environment, it’s like the unclean area glows. It’s very easy to see where the cleaning has not been effective. Digital photographs can be used to document and compare the unclean surface before proper treatment and after.”

Currently, many food processing facilities use the internationally recognized Hazard Analysis Critical Control Point (HACCP) procedures to develop safe cleaning and reporting standards for their food processing facilities, says Holland.

There is nothing like Bactiscan on the market currently, says Holland, and it is being viewed with interest by the food processing industry. A similar

product, Bactiscope, used to scan the insides of pipes up to 20 meters, is also being marketed by Easytesters.

### New representative at TOPIGS



Art Friesen, who has recently joined TOPIGS

Art Friesen has joined TOPIGS Canada as Business Development Representative. Based in Lethbridge, Alberta he will develop sales and provide customer support in Alberta and Montana.

Art is very familiar with the Alberta and Montana swine industry. He is well known to many producers and brings with him years of experience.

He has held positions of sales and key management roles for a large feed company in Manitoba and Alberta. “We are excited to have Art join us at TOPIGS. His extensive knowledge of swine production and related industries will bring great value to the TOPIGS team,” said John Sawatzky, Sales Manager at TOPIGS.

Art Friesen may be reached by calling (403) 382-9741 or via email at [afriesen@topigs.ca](mailto:afriesen@topigs.ca)

### Manitoba producers breathing easier after Puratone purchase

By Myron Love

Manitoba’s beleaguered hog producers are letting out a collective sigh of relief after learning that Maple Leaf Foods has entered into a definitive agreement to acquire the Puratone Corporation, one of the province’s leading hog production companies.

“This deal brings a new level of certainty to our producers in regard to their facilities,”

CONTINUED ON PAGE 10

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says Andrew Dickson, the Manitoba Pork Council's general manager. "It means that their assets have a certain dollar value, should someone be willing to buy their barns." If the Puratone Corporation had been forced to declare bankruptcy, Dickson explains, the company's 50 barns would have been dumped on the market, greatly depressing the value of everyone else's barns.

Puratone was the third-largest hog producer in Manitoba and the fourth largest in the country. The company was started in 1970 and was based in Niverville, just east of Winnipeg. In mid-September, Puratone filed for bankruptcy protection citing a combination of high corn and soybean prices, the recent drought

south of the border which had caused the already high price of corn to spike, the rise in the Canadian dollar over the past five years and the cost of the United States' new mandatory country-of-origin labelling. For the year leading up to its bankruptcy protection filing, the company reported losses of close to \$10 million.

Puratone operated three feed mills and feed-retail facilities in addition to its barns and employed about 300 people. The company produced approximately 500,000 hogs annually (some of which went to the Maple Leaf plant in Brandon), making up about 6% of Manitoba production.

Maple Leaf Foods has been operating processing plants in Brandon and Winnipeg for many years. The Toronto-based firm made an offer of about \$42 million for Puratone's livestock, facilities

and interests in some joint ventures. The transaction was expected to close by the end of November, subject to court and regulatory approvals.

**"As a result of the deal, Maple Leaf will own approximately 30% of the hogs supplied to its Brandon plant"**

"This acquisition will ensure a consistent supply of hogs to our processing facility in Brandon, which is an integral supplier to our value added prepared meats and pork business," said Michael H. McCain, President and CEO, in a press release. "We look forward to welcoming Puratone employees to Maple Leaf and benefiting from their experience and strong commitment to best practices."

"The agreement reached with Maple Leaf represents a tremendously positive outcome and we are very pleased with the stability it provides our stakeholders, particularly our employees," added Ray Hildebrand, President & CEO, Puratone Corporation, in the same press release.

As a result of the deal, Maple Leaf will own approximately 30% of the hogs supplied to its Brandon plant and produce approximately 1.2 million hogs annually. An integration team will lead the process of integrating both operations. No immediate changes are anticipated.

While the same conditions that forced Puratone to sell out have had an equally negative effect on most other Manitoba hog producers, Andrew Dickson reports that most are trying to survive into next year. "We are anticipating that feed grain costs should be lower next year," Dickson says. "That

should save producers some money." He also notes – on the positive side – that the number of pigs being shipped to processing plants seems to be holding steady and that weanling pricing went up about 10% over September and October. "We are just not sure the higher prices are going to last," he says. "The problem is that producers have a lot of debt going forward. We are waiting to see what the government will do."

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Bayer has received market authorization for Baytril® 100 (enrofloxacin) injectable solution for treating swine respiratory disease (SRD).

This life-saving antimicrobial is bactericidal, killing the major culprits responsible for SRD in swine: *Actinobacillus pleuropneumoniae*, *Pasteurella multocida* and *Haemophilus parasuis*. Baytril® 100 is concentration-dependent, not time-dependent, delivering therapeutic drug concentrations to the lung tissues within two hours of a single subcutaneous dose.

Available to veterinarians since 2004 for treating recurring respiratory disease in high risk feedlot cattle, Canadian swine veterinarians can now take advantage of this new tool to help them in their fight against SRD.

"Left untreated, respiratory disease in pigs causes lung damage and increases mortality, impacting the bottom line," said Dr. Bruce Kilmer, Bayer HealthCare, Animal Health's Director of Technical Services & Regulatory Affairs. "Researchers have found that SRD can increase feed costs

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by adding up to six additional days to market.

For swine, the ready-to-use, injectable antimicrobial solution is administered as a single-dose therapy. Baytril® 100 should not be used as a mass medication. The choice of Baytril® 100 as the most appropriate treatment should be confirmed by clinical experience supported, where possible, by pathogen culture and drug susceptibility testing, says a company news release.

For more information on Baytril® 100, contact the Bayer HealthCare, Animal Health technical service line at 1-888-663-5326, or visit [www.animalhealth.bayer.ca](http://www.animalhealth.bayer.ca)

## Can sow temperament influence lameness and longevity?

From Farmscape.ca files

Researchers at the Prairie Swine Centre are investigating whether selection for sow temperament can help to

develop genetic lines that are better suited to group housing systems. As part of a multi-institutional, multi-disciplinary research initiative being conducted on behalf of Swine Innovation Porc, scientists at the Prairie Swine Centre are focusing on the role of temperament in contributing to sow lameness and longevity.

**"We've selected animals that are growing quickly in a competitive feeding situation and often these animals are the most aggressive ones"**

Research scientist Dr. Jennifer Brown says studies around animal temperament and personality are just in their early stages. "When we're looking at managing animals in groups, if we can use temperament traits and measures of assessing temperament, we can select for animals that are better suited to our production systems," she explains. "We're going to be selecting for sows that are less aggressive, animals that are

going to get along well in a group setting."

Some geneticists feel that over the years we've inadvertently selected for animals that are more aggressive, Dr. Brown suggests. "By putting them in a competitive group situation and then measuring their average daily gain and their food consumption, we've selected animals that are growing quickly in a competitive feeding situation and often these animals are the most aggressive ones," she points out. "So both in the swine industry and in the poultry industry we've inadvertently selected for temperament traits, and now if we're more conscious of the animal's temperament and the kind of traits that we want to see in our production systems, I think we will be quite effective at being able to improve productivity and reduce some negative behaviours."


Through selection of temperament it is also possible to select for maternal traits, such as mothering ability, Dr. Brown adds. "We also look

at temperament as related to animals' handling behaviour."

Dr. Brown expects the data gathered through this project to be used by genetics companies or by producers as a tool for selecting replacement gilts.

## Correction

Regarding the article "Assessing lameness, productivity and longevity in sow housing systems" published in the Summer 2012 edition of Western Hog Journal, the following corrections regarding project leadership and collaboration should be noted: the sow lameness and longevity research project is led by Dr. Nicolas Devillers at Agriculture and Agri-Food Canada, and Dr. Laurie Connor at the University of Manitoba. Collaborators in the research include AAFC, the University of Guelph, the University of Manitoba and Prairie Swine Centre. ■




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# Industry Viewpoint

By Bernie Peet

**Over the last few years, the Industry Crisis column has looked at what has been going on in the Canadian industry as our producers have battled a series of unprecedented challenges which has seen the industry reduce in size by nearly a quarter. WHJ Editor Bernie Peet continues to review industry events and trends that will shape the industry in future, both in North America and around the world. He will comment on industry developments and how they impact Canadian producers, providing his unique perspective and personal viewpoint on the important issues.**

## Crisis forces move to integration

The short, sharp shock of dramatically higher feed prices and a depressed hog market in September led to several high profile business failures in Western Canada and, as a result, a move to increased vertical integration by Canada's two biggest packers. First casualty was Saskatchewan-based Big Sky Farms, which went into receivership in September, having previously filed for bankruptcy protection in 2009 after a similar run-up in feed costs. Big Sky has over 40,000 sows and produces about one million pigs per year. Literally days later, Puratone Corporation, one of Manitoba's three largest hog producers, filed for creditor protection. Puratone has 29,000 sows and produces over half a million pigs annually.

On November 1st, Maple Leaf Foods (MLF) agreed to buy Puratone for \$42 million in order to secure the production for its Brandon plant. Meanwhile, in October Olymel made a \$65 million bid for Big Sky, the outcome of which was uncertain at the time of writing, although it seems highly likely that Olymel will be successful. Big Sky ships some of its production to Olymel, some to MLF and some for finishing and sale in the USA. Also, in November, Olymel purchased the inventory of a 6,000-sow production system in Alberta.

## Where is the industry headed?

Clearly, both MLF and Olymel have moved to secure production for their plants. But these moves pose several questions about where the industry is headed and what the implications are for independent producers. First of these

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**"There is only one way that producers will survive in future and that is if they receive more money for their pigs"**

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is why neither processor seemed to recognise that the last 5 years have, on average, been extremely unprofitable for producers and their equity has been eroded to the point where many businesses are in a critical state. There is only one way that producers will survive in future and that is if they receive more money for their pigs. Both processors continued to pay producers on the same basis as before despite a clear indication that the production sector has been in decline since 2007, despite being technically efficient with one of the lowest production costs in the world. This is to some degree an indication of the lack of communication and trust between

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producers and processor. During the five years of industry decline, processors were also lulled into a false sense of security by a huge increase in the number of pigs available for slaughter that, prior to COOL, would have gone to the USA.

Puratone is quoted as saying that it lost an average of \$20 per hog in the 12 months prior to going into creditor protection, while Big Sky said it was losing \$40-50 when it went into receivership. So, the second question that is being asked is whether the two processors can produce pigs any cheaper than these companies. The answer is almost certainly not, they will have to create more margin in their processing and manufacturing operations. So why, producers are asking, didn't processors pay producers more to secure their supply of hogs and avoid the many business failures that have occurred and are still occurring? The move towards integration is irreversible and, while it secures the future of the processors, does not solve the inherent problem that the production sector is unprofitable and likely to remain so. Selling production facilities or inventory to a processor is a possibility for larger producers, but less so for smaller independent producers, who will continue to disappear.

### New business model needed

The production sector is currently as vulnerable as it has ever been and there will undoubtedly be further casualties over the winter months. From 2007-10, a range of government programs, notably AgriStability, provided producers with a degree of protection. Unfortunately, they have also shielded industry leaders from the realization that the industry is unsustainable in its current form. In the current crisis, they have asked for yet more programs, to tide producers over until the time that hog prices rise and feed prices fall. Then what? With no immediate government help in sight, there has been an increasing realization that

carrying on doing what the industry has done in the past is not sustainable. Industry expansion in the 1990s was based on the advantages of a weak Canadian dollar and that scenario is unlikely to return. The only way for the industry as a whole to survive (and that includes processors) is to create more value in the supply chain, so that producers can get paid a price for their pigs that ensures their future.

In late 2009, food consultancy GIRA presented a preliminary analysis of the Canadian pork industry to CPC. Noting the lack of communication between packers and producers, the author, Christopher Lafougère, said "The only thing that flows along the Canadian pig supply chain is pigs. The 'brick walls' that separate production from slaughtering, and slaughtering from retail, are strangling development of the

CONTINUED ON PAGE 14

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## Industry Viewpoint *Continued*

sector.” With very few exceptions, there are no joint producer-packer initiatives to add value to pigmeat, he noted. “Retailers don’t know their pigmeat producers, and producers don’t know or understand the needs of retailers,” he continued.

“And thus, by definition, farmers and their representatives don’t know what shoppers and consumers really need and want.”

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**“In the absence of a value chain approach for the industry, with a better return for producers, the logical outcome is a massive reduction in sow numbers”**

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Two of his key recommendations were to add more value and target higher value markets and to review hog pricing, noting a dysfunctional supply chain and lack of transparency. This report provided an independent overview of what was happening at that time and should have sounded alarm bells for CPC and provincial producer organizations. Instead, it was largely ignored, to the detriment of the country’s producers. Its contents and conclusions remain valid today.

In the absence of a value chain approach for the industry, with a better return for producers, the logical outcome is a massive reduction in sow numbers, with processors scrambling to snap up production as they are doing now. The smaller and vertically integrated business model is one that may eventually be successful for processors, as it is in the USA, but it will be at the expense of the many independent producers that will have to leave the business.

## Manitoba Pork Council proposes provincial hog price stabilization program

From Farmscape.ca files

Manitoba Pork Council is proposing the creation of a new provincial program that would provide pork producers access to capital to cover operating costs during times when returns fall below the cost of production.

As a result of reduced corn production due to drought in the US, feed costs in Manitoba have approximately doubled since last year resulting in dramatic losses within the province’s pork industry and impacting the ability of pork producers to access credit.

Manitoba Pork Council chair Karl Kynoch told producers at the organization’s semi annual meeting that, out of Canada’s top three hog producing provinces, Manitoba is the only one without a provincial program to support its hog producers.

Noting that there are not going to be any cash injections by government, he believes that a hog price stabilization program is the next best alternative. The concept is that Manitoba Pork Council would borrow a large amount of money and, when producers are losing money, provide a loan based on the cost of production and the price they actually received for their hogs.

“Producers would have to commit to us to pay five dollars a hog back roughly. These are just estimates yet,” informs Kynoch. “So when times are very challenging and they’re losing a lot of money it would give them access to capital to keep paying their feed bills and when times are a lot better they wouldn’t be accessing the capital but they would continue to pay the loan down.”

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## Industry Viewpoint *continued*

Kynoch says that the response of the provincial government to the proposed Manitoba hog stabilization program has been positive and it's working with Manitoba Pork Council on the development of the program. He says the sooner a program can be in place and operational the better but, in reality, he's hopeful something can be in place in time to start cutting cheques February 1st.

### EU producers fail to comply with sow stall ban

The EU partial sow stall ban, which came into effect on January 1st, will not have been completely implemented by most of the EU's 27 member states, according to a report published in November by the European Commission. The situation, according to reports from member countries, is that only five countries have achieved 90 percent compliance and four have achieved 70-89 percent compliance.

The Danish pig industry has declared that all its farmers will be ready to implement the sow stall ban when it comes into operation in 2013. The most recent estimate indicates that around 85 per cent of producers are already keeping pregnant sows in group systems. Of those who have not yet converted, a significant number are in the final stages of adapting their

production to comply by the deadline date on 1 January, it was announced at the Hering Congress, held in October.

In contrast, Italy's swine breeding herd is having severe difficulties meeting the 2013 requirements, according to the Italian association of pig breeders (ANAS). Over 50% of Italy's breeding farms still have to convert, which means that about 1,500 farms still have to adjust to the new standards. "The increased costs of production have affected both income and competitiveness, so they lack the resources to adapt to the new animal welfare rules," says Maurizio Gallo, director of ANAS, conveniently forgetting to mention that EU producers have had 10 years to make the change to group housing.

The European Commission has said it will not be introducing a derogation.

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**"The EU Commission has also warned that member countries must not introduce their own labelling systems for identifying pigment from non-compliant systems"**

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British pig industry representatives have raised the question of unfair competition from non-compliant pig farms. The Commission said that non-compliant producers would risk



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sanctions by the relevant authorities in their own countries, ranging from fines to restrictions on their activities. However, it will not be introducing its own restrictions on the marketing of non-compliant pigmeat. It says that to do so would “interfere with the European Union internal market of pigmeat”.

The EU Commission has also warned that member countries must not introduce their own labelling systems for identifying pigmeat from non-compliant systems. It said unilateral measures taken by individual member countries would have no legal basis and would be in contradiction of the principles of the common market. “Animal welfare legislation must be enforced on farm and not indirectly via discriminating animal products,” said the Commission.

### European pork prices could soar in 2013

European producers face a “double whammy” of high feed prices and EU legislation to phase out sow stalls that will lead to a large rise in the price of pork during 2013, according to market analysts. “Bigger falls in pig meat production than originally forecast are possible,” says a recent report by the British Pig Executive (BPEX) which looks at the introduction of the partial sow stall ban across Europe on January 1st 2013. “This is the result of rocketing feed costs and could lead to a sharp rise in prices for pork and pork products.”

The most likely scenario is a fall in pig meat production of around five per cent from 2011 levels by 2014, leading to price increases but with fairly rapid recovery as productivity improves, BPEX believes. The worst case scenario would be a sharper fall in production as higher feed prices add to the impact of the stall ban, leading to shortages of pig meat and substantial price increases, resulting in pressure for political intervention, the report says.

“The sow stall ban cannot be taken in isolation. It is happening at a time when pig producers are under considerable financial pressure due to high feed costs,” says BPEX Chairman Stewart Houston. “We are already seeing producers leave the industry both in the UK and across Europe. This will lead to a fall in production and a consequent rise in prices.

Forecasts of the likely reduction in EU production vary significantly, but is likely to be at least 5%, which combined

with the impact of higher feed prices, will push up pork prices. “We are forecasting wholesale price rises of at least 10 percent year-on-year which could rise to 20 percent if production is reduced,” according to Mick Sloyan, BPEX chief executive.

### Tesco to introduce direct contracts with British producers

Britain’s biggest food retailer, Tesco, is to establish a dedicated producer group that will involve long term cost of production contracts with a feed price escalator. Tesco will work directly with around 140 pig farmers who will supply the majority of its own-brand fresh pork. Prices will be reviewed every month, with the cost of feed being taken into account. The new deal marks an important change in direction in Tesco’s sourcing policy. It is designed to help take the pressure off farmers caused by feed price volatility. Pig farmers will be

CONTINUED ON PAGE 18

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## Industry Viewpoint *continued*

given a direct contract, which has been drawn up with input from the national Pig Association (NPA). The Tesco contract will last for up to three years to help producers plan ahead in the knowledge they will receive a fair price for their product.

Working to a tight timetable, Tesco will create two supply groups, one for beef and one for pigs, both run by

farmer committees. The new Tesco supply groups will involve up to ten percent of pig and beef farms in the country, with livestock in both groups being reared to meet Tesco's welfare standards. The groups - which involve a £25m investment by Tesco - will break new ground as it will be the first time a retailer has had direct contracts with producers alone, rather than with producers and processors.

Tesco's sustainable farming group for pork initiative has been warmly welcomed by NPA chairman Richard Longthorp. "By creating this direct relationship with pig farmers, Tesco will bring an unprecedented level of transparency to the pricing of pigs and pork from farm to fork," he said.

"Pig farmers have been under pressure with significant rises in feed prices so it means a great deal to work in partnership with them and British beef farmers to help secure the industry's future in this country," said Derek Lawlor, Tesco meat, fish and poultry director. "Not only will our customers enjoy even more high quality, high-welfare British meat in our stores, the Tesco sustainable farming groups, like our pioneering dairy group before them,

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**"The new Tesco supply groups will involve up to ten percent of pig and beef farms in the country"**

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will guarantee farmers a fair price for their meat and allow them to invest and plan for the future."

The new approach will also involve challenges for producers. Tesco will want its contracted suppliers to produce pigmeat at a demonstrably competitive cost of production, and to high welfare standards. ■

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# Alberta Pork AGM

## Alberta Pork AGM looks to the future

By Bernie Peet



Frank Novak, Chairman of Alberta Pork

After five years of financial pressures, the western Canadian pork industry seems to have come to the realization that continuing with the business model that served the industry reasonably well until the mid 2000s is not going to sustain it in the future. Speakers and producers at Alberta Pork's AGM reflected the growing concern that without a major change in direction, the industry will continue to decline as producers run out of equity.

Alberta Pork chairman, Frank Novak, noted that 2012 had started off with the promise of rebounding hog markets and the possibility of a bumper crop on the prairies, but ended up a nightmare after a drought in the US Midwest and crashing hog prices as producers dumped hogs onto the market in September. "The result of this disaster is that once again our industry is facing the loss of more producers and more hogs," he said. "The weakened balance sheets resulting from our previous losses mean there is little room to manoeuvre as we face another round of increasing debt or exit from the industry."

### Finding a long term, sustainable solution

Novak believes that the first step to solving the industry's problems is to work with other sectors of the pork industry and with government to find a long term, sustainable, solution. He says that the federal government does not accept that the current suite of programs fails to provide adequate coverage for many in our industry. "We continue to be told that we should have done a better job of managing risk and that we need to find a way to do things differently," he said.

Novak believes that the current crisis may "wake up industry partners and make them do something." He says that the production sector needs to find a way to work with the rest of the pork value chain to make sure that we have revenue parity with our major competitors in the US. "This comes

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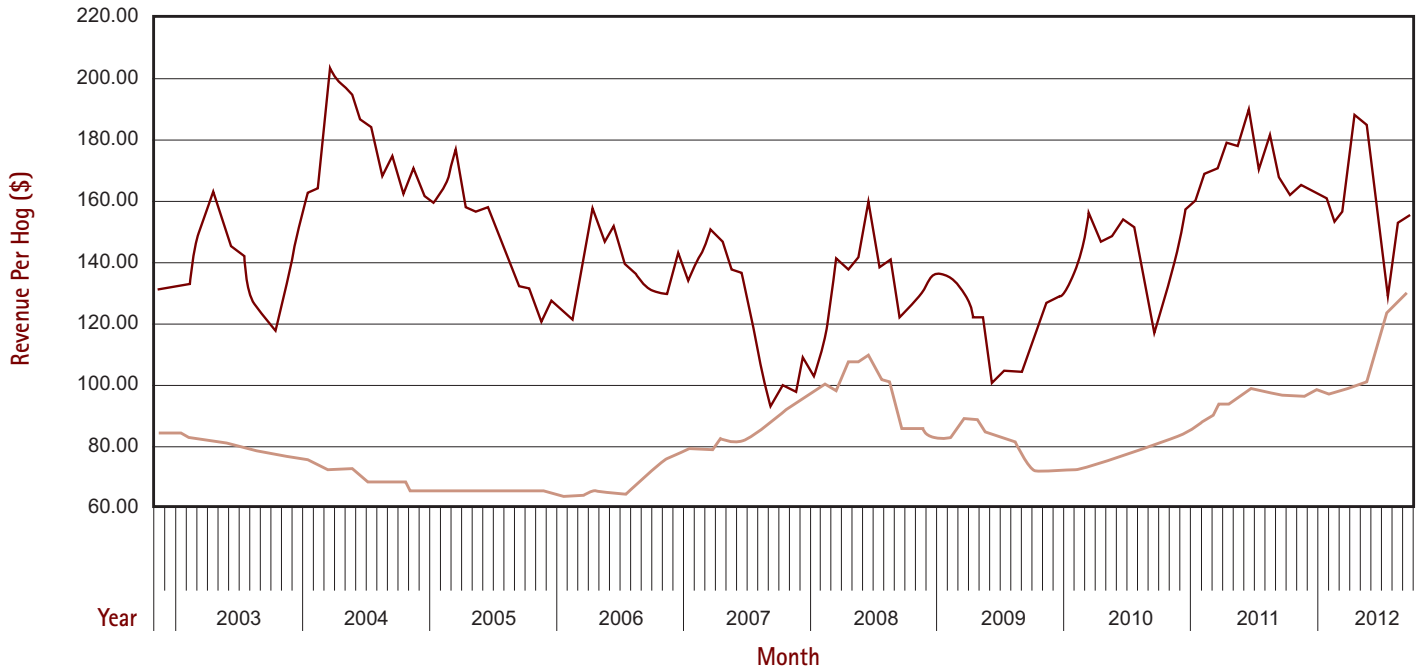
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Figure 1: Hog revenue and feed cost, 2003 - 2012



CONTINUED ON PAGE 22

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first in the form of prices paid for our hogs, but also ensuring that product which does not meet Canadian production and safety standards is not allowed to be dumped in our market and depress pork prices here," he said. "Our retailers need to become our partners rather than being opportunistic buyers with no view to the impacts on our local value chain."

**"It is time for the rest of the value chain to contribute something other than demands"**

Second, Novak suggests, we need competitiveness in terms of costs for our inputs and regulatory burdens being placed on our industry. This includes labour cost and availability which continues to be a challenge for the industry. "Additional costs threaten our industry in the form of demands for changes in our production systems to address the perceived requirements of our customers," he continues. "The proposed new code of practice contains many items which will serve to increase our costs. It is time for the rest of the value chain to contribute something other than demands, as producers are unable to bear the burden alone every time a change is requested."

The current situation in the industry highlights the need for better risk management tools and strategies, Novak says. "Misguided government policies around the world have created a trade off between food and fuel that will only serve to increase the volatility of the world we operate in," he notes. "Western Canadian producers need access to the same risk management opportunities on the input side that our competitors in the US have."

**Cost of production has rocketed**

Alberta Pork's Executive Director Darcy Fitzgerald said that data from a three-year project on cost of production (COP) had shown the huge increase in costs that occurred in 2012.

The project currently has 23 participants and is designed to track production costs in a variety of systems and identify opportunities for cost reductions. "At this point, we are seeing an average COP of \$167.27 per hog marketed in 2011 with a range of \$193.87 to \$139.91 per hog when comparing the highest 25% and the lowest 25%," he reported. "In 2012, we have calculated an average COP of \$189.38 per hog marketed and, clearly, the major cost increase was related to feed."



Darcy Fitzgerald, Executive Director of Alberta Pork

Fitzgerald notes that comparison of these costs with those in the US showed a \$1 advantage to Alberta in 2011 compared to the US Midwest, but a \$14 disadvantage in 2012. "In a significant drought year, does that mean that they have better risk management options, such as contracts on supplies and services, to mitigate fluctuations in production costs?" he asked. He noted that Alberta Pork will be helping producers to gain more information on business risk management tools, while looking to enhance existing tools and develop new ones to help producers navigate the volatile marketplace.

Fitzgerald also stressed the need for a new relationship with processors and the rest of the supply chain. "We realize that the packing industry must also be viable but we still feel that the revenue issue must be addressed, as our competitors have an advantage on that front as well," he said. "The pigs may not be shipped into our marketplace, but the pork certainly is, and at prices that are harmful to sound economics for all, while giving a false sense of reality to the Canadian consumer." He believes that this needs to

CONTINUED ON PAGE 24

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be addressed in a manner that gives a positive outcome for both Alberta Producers and the packers they have a business relationship with. “The key is a new attitude for a new model, one in which we succeed together rather than at each other’s expense or peril.”

### Positive push with Passion for Pork

On a positive note, during 2012, Alberta Pork launched an ambitious domestic awareness initiative called “Passion for Pork”, which generated an outstanding response, according to Fitzgerald. The objective is to showcase the quality and versatility of Alberta-grown pork.

**“Young people are unfamiliar with most pork cuts and only know about bacon and chops”**

Describing the campaign, Dennis McKnight, with Calgary-based The Innovators, noted that the focus was on Alberta and BC, which represented 25% of the national market for pork. The challenge, he said, was that the typical pork consumer was old and that most people under 25 hardly ever eat pork. There is also still a belief that pork is the unhealthiest of the red meats and that it needs cooking to death due to food safety concerns. “You must have young people eating your product,” he

stressed. “The problem is that young people are unfamiliar with most pork cuts and only know about bacon and chops.” Because of that, people want recipes, he believes, pointing out that over 20,000 people had visited the Passion for Pork website since its launch in May and that there are now over 100 recipes on the site. It also includes videos of leading chefs in the two provinces cooking pork, which have been used as the basis for 10-second TV advertisements that ran in Edmonton and Vancouver over the summer. “Every day that the adverts ran we got 400 plus hits on the website and our videos on YouTube have been viewed 6500 times,” McKnight notes.

“Just as producers are passionate about what they do, chefs are passionate about pork,” McKnight says. “It’s actually their favourite meat but it is not on their menus, but now pork is making a comeback, especially in the food service industry.” As part of the campaign, the Passion for Pork Restaurant Week encouraged chefs to put pork on the menu and come up with three new pork recipes. “Pork has a price advantage, whereas beef is getting too expensive,” McKnight believes. “The price challenge for chefs is to keep the price of an entree at below \$25 and this is very hard to do with prime rib.”

The second phase of the Passion for Pork campaign in 2013 will be about encouraging consumers to taste local quality and tell people where they can

buy Canadian pork. “For example, we will be working retailers that sell exclusively local product in their western Canadian stores,” McKnight explains. “We will be working with Sunterra Market and, hopefully, Save-On Foods.”

Darcy Fitzgerald says that Passion for Pork is more about engaging all parts of the value chain through consumer awareness than it is about marketing a specific pork product. “We have a system that is broken,” he says. “It has distinctive and separate parts that do not have a history of good relationships. Our aim is to break through this in somewhat of a different approach so that all find benefit and trust.”

### Producers in ‘race to the bottom’

While there are many positive things going on in the industry, the mood of most producers is one of desperation and uncertainty about whether they will survive until feed prices moderate and hog prices increase in spring. “We are in a race to the bottom and could end up with only 400,000 sows in Canada if we carry on like we are,” said producer Rocky Morrill. “Our consumers pay the least for pork than almost anywhere in the world and we need retailers and consumers to understand what is going on. We have such a disconnect between the producer and the consumer!” Tony Martinez, Senior Vice-President of Donald’s Fine Foods/Britco agreed, saying that there has to be pressure on retailers to support Canadian pork and that we have to get the consumer to understand that they have to pay more.

A motion to carry out a study of supply management for the pork industry was defeated after much discussion, but, said Rocky Morrill, this might be the only way the industry could be saved. “I don’t see anything else; if you are flying at 50,000 feet, you can see the demise of the Canadian pork industry.” ■

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# Americans 'eating our lunch', says Greer

By Bernie Peet

Imports of pork from the US have increased so much in recent years that Canada will soon be importing more than it exports to the US, according to Kevin Greer, Senior Market Analyst at the George Morris Centre. "The US pork industry is basically eating our lunch," he said, speaking at the Alberta Pork AGM. He noted that the Canadian pork industry had lost 150,000 sows or 3 million market hogs per year since 2007, and suggested that another 30-50,000 sows could have been lost in the last 6-9 months.



Kevin Greer, Senior Market Analyst at the George Morris Centre

Due to the difficult conditions in the industry, Greer predicted that US production could be down by about 2% in 2013, although he noted that productivity is still increasing by 2% per year while domestic demand is weak. The

reduction in sow numbers, combined with good export demand should support prices in 2013. He predicted average Canadian prices of \$1.50, \$1.65, \$1.65 and \$1.50 respectively for the four quarters of 2013, suggesting that it will be a year of breakeven rather than large profits.

"2012 was all about corn. The drought was the story of the year and it's still going on," Greer said. "Corn prices have been trending up since 2007 and, whereas they used to be related to supply, there is now a whole new price supply and demand relationship due to the ethanol industry." Between 2007 and 2012, the amount of corn going into ethanol doubled and the price of corn doubled, he noted. "Forced usage and subsidization of ethanol, supported by government, has caused the issue," he believes. "Canada's policies make this even worse. Ethanol production in Ontario adds \$10-20 per tonne to the price of corn, or \$5 per pig. On the prairies, grain prices are increased by \$5-10 per tonne or \$2 per hog". Ethanol policy in the US and Canada adds cost to the livestock

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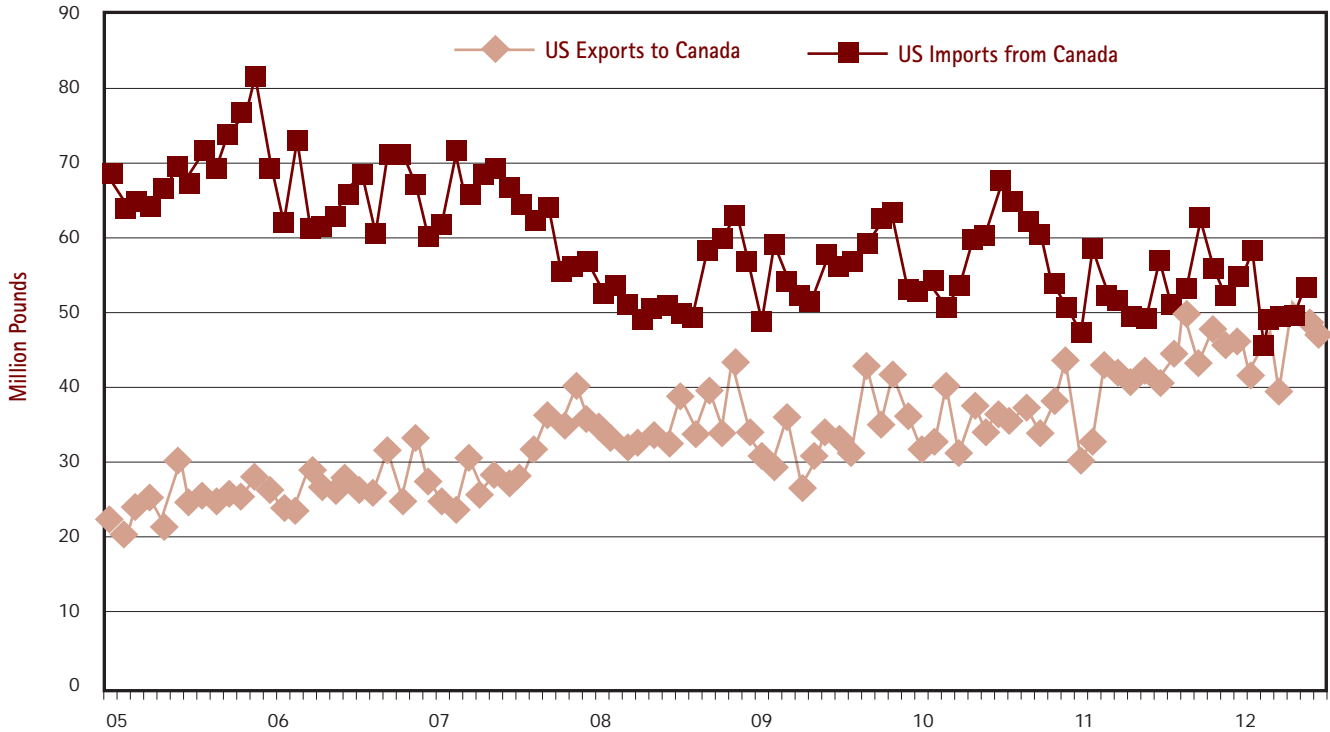
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CONTINUED ON PAGE 26



Figure 1: How the Americans are stealing our lunch - Canada - US pork trade



Courtesy Kevin Greer, George Morris Centre

industry and reduces its size, while it also has a massive impact on consumers' food bills, he suggests. "Why Alberta would have an ethanol policy is beyond me. It has the biggest livestock industry in Canada and the biggest oil industry!" he exclaimed.

Greer noted that the structure of the western Canadian industry has changed considerably over the last five years.

**"The market leverage is moving towards the producer and packers are nervous about supply"**

"Forty percent of prairie hogs are now controlled by packers and the industry is becoming more vertically integrated,

he said. "The market leverage is moving towards the producer and packers are nervous about supply, which is why their hands were forced on Big Sky and Puratone."

Despite the current challenges, western Canada still has many advantages for hog production, Greer concluded. "There is an abundance of land and water, low animal density good health status and, in the long term, feed price advantages," he pointed out. And, with high global demands for pork, there are signs for optimism, he believes. ■

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# Speaking up for agriculture

By Bernie Peet

Farmers often complain that they are misunderstood by the general public, yet the agricultural industry has been poor at communicating its messages and in engaging the end consumer of their crops and livestock products. A new initiative in Ontario - Farm and Food Care Ontario - is speaking up for food producers and telling consumers the story of where their food comes from. "While surveys suggest that less than 10 percent of people feel they

know very much about farming, the good news is that farmers get a good report card on the overall impression of farmers and Alberta scores the highest," said Crystal Mackay, the organization's Executive Director. "However, the average Canadian doesn't know or care who you are or what you do."

Farm and Food Care is a new leadership model which involves crop and livestock farmers working together to do public outreach and education about farming and food. To some degree, it is aimed at countering the effects of activists that are against animal agriculture. "Animal rights is not about animal welfare," Mackay stresses. "They are against using animals for the benefit of humans and hide behind an animal welfare front." She notes that activists tackle easy targets such as animal housing on the farm, in the plant and during transport, in addition to issues such as hormones, antibiotics, factory farms and corporate control. But while the Humane Society International raised \$140 million in the US alone last year, Mackay points out that it only spent 0.5% of its income on pet shelters but spent 5% of its income on its own pension plan.

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**"More than two-thirds of Canadians want to know more about where their food comes from"**

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Mackay warned producers that they should not provide ammunition for activists in the current environment of undercover videos. "Don't have anything on your farm that you wouldn't want to see on YouTube or the 6 o'clock news," she said. However,



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Crystal Mackay, Executive Director of Farm and Food Care Ontario

her main focus was on the opportunity to tell a good story. “More than two-thirds of Canadians want to know more about where their food comes from. Farmers, vets and researchers are all very credible with the public and we have a great story to tell!” she exclaims. And, while negative stories outsell positive ones by 7 to 1, Mackay says she detects a real shift in the media, with more balanced stories in the press and on TV.

One big success story has been Media and Culinary Farm Tours, which have been sold out. “The tours are high risk, but rewarding,” comments Mackay. “We take journalists to all sorts of farms, as well as providing information to the media all year round.” It is also possible for journalists and the general public to view a variety of farms online at [virtualfarmtours.ca](http://virtualfarmtours.ca). A book - *The Real Dirt on Farming* - which addresses all the concerns identified in surveys, has been very successful, with 100,000 copies being

distributed across Canada. “We have also started doing The Real Dirt on Farming speaking tour, which is targeted at the business community,” notes Mackay. “The talks have been given by farmers and so far have been presented to 700 people, who have all been very interested.”

“If you don’t tell your story, you lose by default,” Mackay believes. She challenged producers to get out and tell their story at every opportunity, through hosting a tour, writing to newspaper editors, having a Facebook or Twitter page or a blog. She gave 10 tips for being an agricultural ambassador, the first of these being to have a positive attitude and think customer service with a smile. “Be prepared for the sort of issues that are likely to be raised and talk about what you know,” she advised. “Invite discussion, but avoid debates and confrontation. Use clear easy to understand words and concepts. Use comparisons and examples that your audience will relate to but don’t use human/animal comparisons.” Above all, she says, show you really care. “Stress the care that you put into looking after your animals 365 days of the year.”

“Farmers are rated equal to family in terms of warmth, so we have a big communication advantage,” Mackay concludes. “Farmers are true heroes, so you can be proud of being a food producer and speak up with a loud voice.” ■

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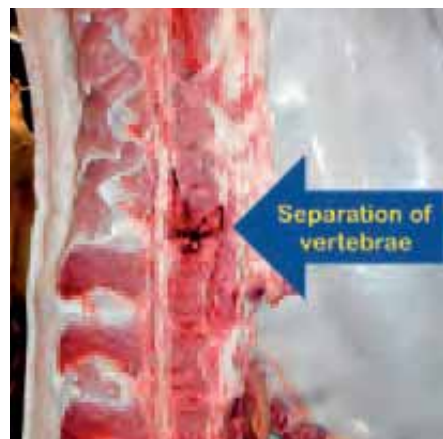
## Is the mineral content of hog diets too low?

By Eduardo Beltranena, Alberta Agriculture and Rural Development, and Matt Schoonderwoerd, Olymel

**The number of hog carcass contamination and trimmings related to spine fractures is increasing at Olymel, Red Deer, and possibly at other hog processing plants. The incidence is not generalized to cause major industry concern, but hogs from several farms are affected. The culprit may be a reduction of phosphorus and calcium in feed associated with phytase enzyme inclusion.**

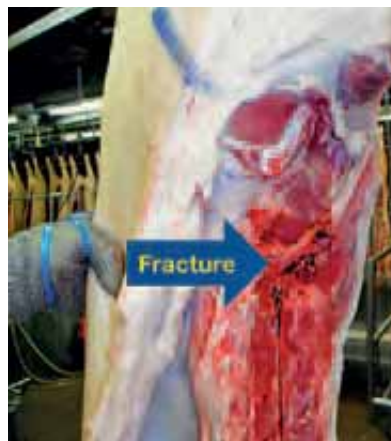
### What are we seeing?

Some farms have up to 6 times the plant average number of carcass contamination and trimmings due to pathological fractures. The fractures we are seeing involve one or more adjacent vertebrae (Figure 1) or the spine breaking above the pelvis (Figure 2). It seems to happen just before or around the time of slaughter or carcass dressing.



Spine fractures involve one or more vertebrae

Yellowish or bloody bone fluid leaks out of the fracture(s) running down the carcass causing contamination. It seems to happen close to the time of slaughter or carcass dressing as there are no signs of prior swelling, haemorrhage, necrosis or nervous tissue damage.



Broken spine above the pelvis

Unless contacted by their packer, producers are largely unaware of this type of mild bone mineral deficiency. Settlement statements do not provide producers enough details about this type of carcass contamination and trimming. Packers may also report an increase in the number of downer hogs. However,

the downers might be unrelated to hog exhaustion. Spine fractures may also occur when moving pigs for shipping at the farm, during trucking, or at lairage at the plant. Affected hogs may still be able to walk, appear normal, and may not be identified by CFIA inspectors during ante-mortem inspection. Most likely abrupt leg extension and muscle tensing as a result of stunning, followed by scalding and de-hairing, may be the main triggers.



Broken ribs that have healed at the time of slaughter suggest a prolonged, yet mild, mineral deficiency occurring since pigs were young

Suboptimal mineral nutrition on farm seems to predispose the condition to occur at slaughter. We see broken ribs that have perfectly healed (Figure 3) by the time of slaughter. Broken ribs that have healed suggest that bone mineralization has been compromised since pigs were young.

CONTINUED ON PAGE 32

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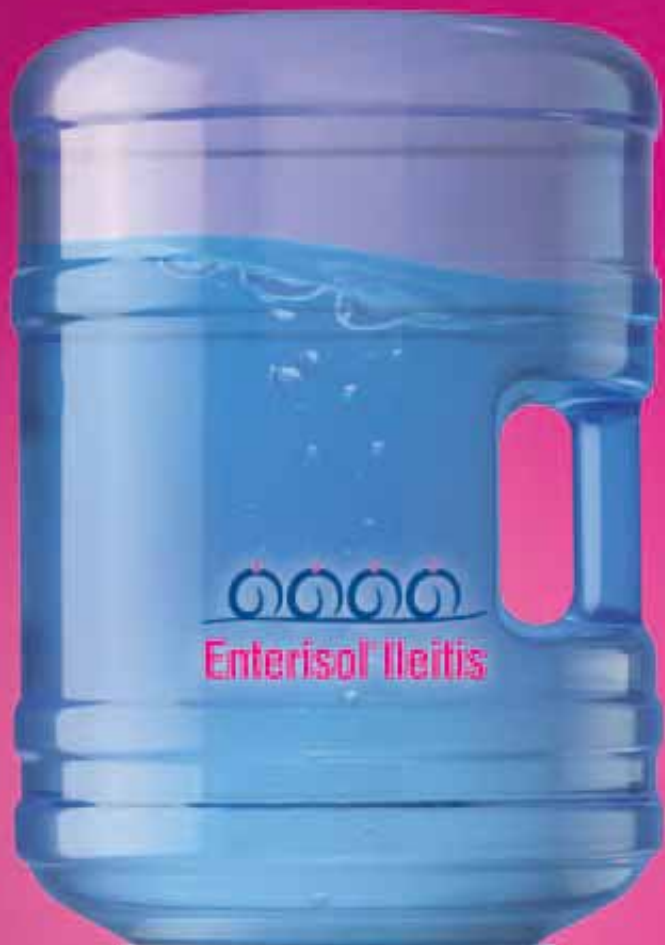
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### What might be the cause?

It is speculative at this time, but a common denominator to farms where affected hogs come from is phytase enzyme inclusion in feed. It is unlikely that the cause is this feed enzyme that increases phosphorus availability from cereal grains and protein meals. Possibly the cause is the parallel reduction of phosphorus and calcium inclusion from mineral sources in feed assuming that the phytase enzyme

makes more phosphorus available from feedstuffs. Mono-dicalcium phosphate and limestone are the most common sources of rock-derived phosphorus and calcium, respectively, added to feed. Producers and nutritionists have acted responsibly reducing excess phosphorus excretion in manure that could leach into water bodies promoting algae growth. Thus it might be that, in affected farms, the reduction of rock-derived phosphorus and (or) calcium

in feeds including phytase enzyme may have gone past the threshold resulting in a mild, but prolonged phosphorus deficiency. It does not mean that the phytase enzyme is at fault or ineffective, just that in farms with increasing incidence of spine fractures, mineral phosphorus and calcium inclusion in feed needs further consideration and adjustment.

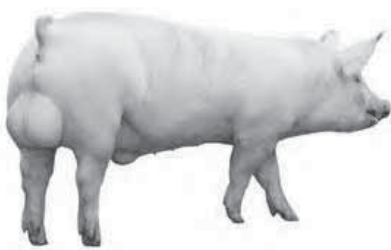
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**"Producers may never see hogs walking abnormally if trauma happens after hogs left the farm or after stunning"**

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The incidence of spine fractures at slaughter may also be compounded by pen crowding. Nutritionists, unaware of what's going on on-farm, formulate calcium and phosphorus feed content to expected hog feed intakes. Pen crowding may limit feeder access and reduce feed intake resulting in compromised bone phosphorus uptake from feed. Gilts and sows won't likely be affected due to greater phosphorus and calcium inclusion margins in breeder diets.

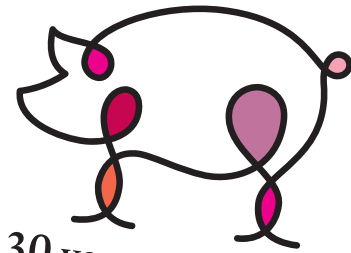
The spine fractures observed don't seem to occur until physical trauma takes place. Thus producers may never see hogs walking abnormally if trauma happens after hogs left the farm or after stunning. If spine trauma occurs at moving pigs, weighing to gauge market weight, or at truck loading for slaughter, herdsmen might see the odd hog walking abnormally from the hindlimbs, even showing leg tremors, distinct from lameness or low leg injury symptoms. One may assume it is temporary and that the affected hog will recover. More seriously affected hogs 'dog-sit', squeal when disturbed, and should not be shipped. Such hogs may be coded as downers if they arrived like that at the plant or the spine fractured while fighting in the lairage.

The incidence of spine fractures has been described in the literature as *'pathological fractures'*. Despite the fact that there is no specific disease pathogen, if left unattended, it could indeed become pathological. But the spine fractures we are observing happen so close to slaughter or soon after, that there is not time for swelling to develop, hemorrhage to extend, adjacent tissue damage or necrosis to spread.

Producers should be vigilant of suspecting spine injury when moving pigs and at loading hogs to slaughter. Review hog settlement statements tracking any increase in the incidence of condemnations and trimmings likely resulting from spine fractures. Packers are aware of the desire to assign a more descriptive code to spine fractures. Review the checklist below if you suspect an increase in hog spine fractures. ■

### What to do if the incidence of spine fractures increases in your hogs?

- ✓ Herds with high incidence may have already been contacted by packers. Communicate monthly until the incidence diminishes.
- ✓ Monitor condemnations and trimmings. Track if the incidence of spine fractures is increasing, decreasing, or constant.
- ✓ If increasing, be more gentle moving pigs and loading hogs. Avoid prod use.
- ✓ Alleviate pen crowding and ensure unrestricted feeder access.
- ✓ Ask your nutritionist to review dietary phosphate and limestone inclusions.
- ✓ Discuss with your veterinarian. There might be other causes compounding the occurrence of spine fractures.
- ✓ Contact the authors if you wish to discuss the incidence in a confidential manner.



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## Teat use or non-use in first lactation affects its milk yield in the next lactation

By Chantal Farmer, agr., Ph.D. and Nicolas Devillers, Ph.D., Research scientists, Agriculture and Agri-Food Canada, Sherbrooke, QC

**New findings demonstrate for the first time that teats which are used in first lactation will produce more milk in the second lactation. Indeed, piglets suckling teats which were previously used weighed 1.12 kg more on day 56 than piglets suckling a previously unused teat. Such knowledge is critical for producers to make the best decision in terms of management strategies for their first litter sows.**

**In second lactation, when faced with the choice “Should I use a teat that was suckled previously or not?” piglets preferred to use a teat that was suckled in the previous lactation. Indeed they were willing to fight more to suckle such a teat. The question remains as to how they can make that distinction.**

With today’s hyperprolific sow lines, swine producers are currently faced with a problem in their farrowing rooms; namely, should they “load” the primiparous (first litter) sows with as many piglets as possible or should they leave some teats unused to give these sows a “respite”. This is particularly important in first parity sows with poor body condition, in order to avoid the “lean sow syndrome” which potentially leads to reproductive problems.

New findings demonstrate for the first time that teats which are used in first lactation will produce more milk in the second

lactation. Indeed, piglets suckling teats which were previously used weighed 1.12 kg more on day 56 than piglets suckling a previously unused teat. Furthermore, development of a teat

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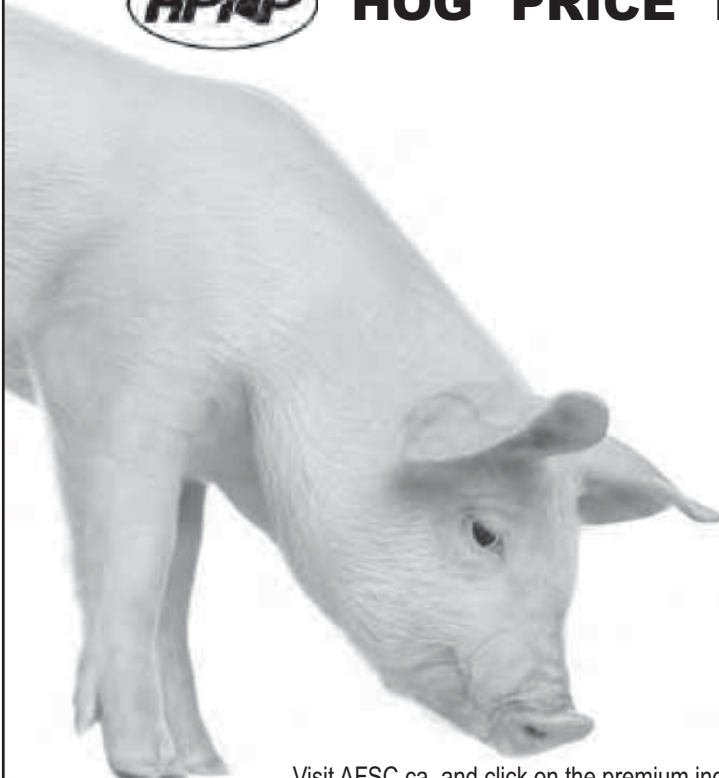
**“Teats which are used in first lactation will produce more milk in the second lactation”**

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which was previously used is improved in the second lactation and piglets suckling teats which were not used previously show a greater level of hunger in second lactation.



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Figure 1: Taping of mammary glands of a sow

These results emanate from a project which was recently carried out at the Dairy and Swine Research and Development Centre in Sherbrooke, QC. Forty-seven first-parity sows were divided into 2 groups: 1) sows with the same teats being suckled in 2 subsequent lactations (SAME, n = 22); and 2) sows with different teats being suckled in 2 subsequent lactations (DIFFER, n = 25). In the first lactation, over half of the teats (teats 1, 2, 5, 6, and 7 from 1 side of the udder, and teats 3, 4, and 7 from the other side) were sealed with tape so that they were non-functional (Figure 1). During

the following lactation, the SAME group had the same teats sealed as in the first lactation, so that in second lactation piglets were only suckling previously-used teats. In the DIFFER group, the opposite teats were sealed in first and second lactation, so that piglets in second lactation were only suckling teats which were not used previously. In both parities, litters were standardized to 7 piglets around birth and to 6 piglets at 48 hours postpartum so that there was 1 piglet per available functional teat. During the second lactation, piglets were weighed at birth and on days 2, 4, 7,

CONTINUED ON PAGE 36

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**Table 1: Second parity weights and weight gains of piglets from sows with the same teats suckled in parities 1 and 2 (SAME) and sows with different teats suckled in parities 1 and 2 (DIFFER)**

	SAME	DIFFER
<b>Weight, kg:</b>		
Day 2	1.65	1.57
Day 4	2.08	1.93
Day 7	2.92	2.71
Day 14	5.39	4.97
Day 21	6.73	6.29
Day 35	10.83	10.28
Day 56	22.72*	21.60
<b>Weight gain, kg:</b>		
Days 2 to 4	0.43*	0.35
Days 4 to 7	0.84	0.78
Days 7 to 14	2.47*	2.26
Days 2 to 14 (lactation)	3.74*	3.40
Days 21 to 35	4.09	3.99
Days 35 to 56	11.90	11.32

\* Values on the same line differ

14, 21, 35, and 56 postpartum. Weaning was at  $17 \pm 1$  days of age. Behavioural measures were obtained (using 24-hour video recording) on days 3 and 10 of lactation on 15 sows per treatment to evaluate hunger of piglets, using aggressiveness and nursing behaviour as indicators. At weaning after the second lactation, 16 sows per treatment were slaughtered and 4 functional mammary glands were collected for dissection and determination of composition.

In the second lactation, birth weights of piglets from SAME and DIFFER sows were similar, yet piglets from sows with the same teats used in both lactations weighed 1.12 kg more on day 56 than piglets from sows with different teats used in both lactations (Table 1). A difference in piglet weight gain was observed as early as from days 2 to 4 of lactation (Table 1), which suggests that colostrum yield, and not just milk yield, might also differ between the 2 groups. Functional mammary glands from SAME sows contained more parenchymal tissue, which is the tissue where milk is secreted. This parenchymal tissue had more cells with a greater metabolic activity than similar tissue from DIFFER sows. Milk composition was not affected by treatment and blood samples obtained from sows in early and late lactation indicated that hormonal and metabolic status of the sows were similar in both groups. On the other hand, sows with the same teats used in both lactations consumed more feed during lactation in parity 2 than sows with different teats being used, which is in agreement with their greater milk yield. Behavioural measures also indicated a greater hunger level on day 3 for piglets using teats that were not previously suckled which corroborates the lower weight gain in these litters. More specifically, piglets from litters with different teats used in both lactations massaged the teat longer after milk ejection and had a greater incidence of fights so that they missed more nursings.

Such results led to the question: can piglets differentiate between a “good” teat that was suckled in the previous lactation and a teat which was not used previously. A project using 8 sows was carried out to answer that question. Teats were sealed in first lactation as described above, but in second lactation none of the teats were sealed and 8 piglets were left with the sow, so that 8 piglets were present with only 6 previously-used teats. Amazingly, piglets could tell the difference between previously-used and -unused teats. There was a greater incidence of fights which lasted longer at teats which were previously used. There was also a greater incidence of these teats being suckled by the piglets.

In conclusion, current findings clearly show that teats which were suckled in first lactation produce more milk and have a greater development in the second lactation than teats which were not suckled in first lactation. Furthermore, piglets seem to be able to differentiate between previously-used and -unused teats. Such knowledge is critical for producers to make the best decision in terms of management strategies for their first-parity sows. ■



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## Experts urge pork industry to adopt NIRS technology

By Bernie Peet

Feed ingredient analysis using Near Infrared Reflectance Spectroscopy (NIRS) provides a quick and simple analysis of the feeding value of a wide number of feed ingredients, allowing feed manufacturers and nutritionists to more accurately formulate animal diets. The technique is especially valuable for measuring the energy content of cereal grains, which can vary by up to 20%. Researchers at the University of Alberta have developed a reference library of analyses for barley and wheat which is the most extensive in the world, and which is available to calibrate NIRS machines. Not only that but funding is available through the Alberta Crop Industry Development Fund (ACIDF) to cover half the cost of purchasing NIRS equipment, up to a maximum of \$20,000. At two workshops held in Lethbridge and Lacombe, Alberta, a group of livestock producers, nutritionists and feed manufacturers were urged to adopt the technology in order to reduce feed costs and heard speakers explain the application of NIRS in practice. We report on the information presented by speakers at these meetings.



Mary Lou Swift, from Alberta Agriculture and Rural Development

Mary Lou Swift, from Alberta Agriculture and Rural Development, is the manager of the NIRS network for the province and provides technical support to users. She manages the database of samples that are necessary not only to calibrate NIRS equipment but also to maintain its accuracy. “NIRS technology is based on a near infra-red light spectrum, similar to microwaves or radio waves,” she explains. “The light source passes through the sample and the

light is either reflected or absorbed by hydrogen bonds in the molecules, almost like light going through a prism. This produces a ‘fingerprint’ or unique spectrum, with particular

wavelengths being associated with colour, fats, starch or amino acids.” Because NIRS is not directly measuring factors such as moisture, fat and starch, it has to be ‘trained’ to recognize what’s in the sample. This is done by referencing each sample with chemical analyses. “You need a sample set with the amount of variation that you see in practice, a population of samples for each type of product,” she points out. “For example, the population for one variety of barley would not be the same as another. There may be outliers and you need to ask - did I scan it correctly or is it genuinely a very different sample?”

NIRS is good at measuring organic molecules containing hydrogen and so can measure moisture, protein, starch, fat, fibre (ADF and NDF) and lignin, in addition to amino acids. But, notes Dr. Swift, it is not good at measuring inorganic molecules such as minerals. NIRS is also used for manure analysis, so that nutrient application can be more accurate.

“The advantages of using NIRS include easy sample preparation - either dry ground or whole grains and pulses

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- and its low labour cost as it only takes 30 seconds to analyze a sample,” notes Dr. Swift. “It also has no environmental impact, because there are no chemicals to dispose of, unlike wet chemistry analysis and, unlike chemical methods, it does not destroy the sample.” NIRS carries out multiple analysis, with up to 32 variables, compared with chemical analysis which needs many tests, she adds. Importantly, the method is very precise and the results are extremely consistent. Its main disadvantage is the need for initial and ongoing calibration and it is also expensive to purchase, at \$40-50,000.

### Using NIRS in a commercial setting

Geoff Smith with DFS Animal Nutrition, Newell, Iowa, has been using NIRS since 2006. The company now manufactures 1 million metric tonnes of feed each year and is a high volume, high by-product mill, with a focus on service. “We are not so much a feed mill as a blender of ingredients,” he says. “In order to achieve quality and low variation, we need to focus on knowledge about the ingredients.

“We use NIRS in three ways,” Smith explains. “First, we use it for purchasing,



Geoff Smith, DFS Animal Nutrition, Newell, IA, has been using NIRS since 2006

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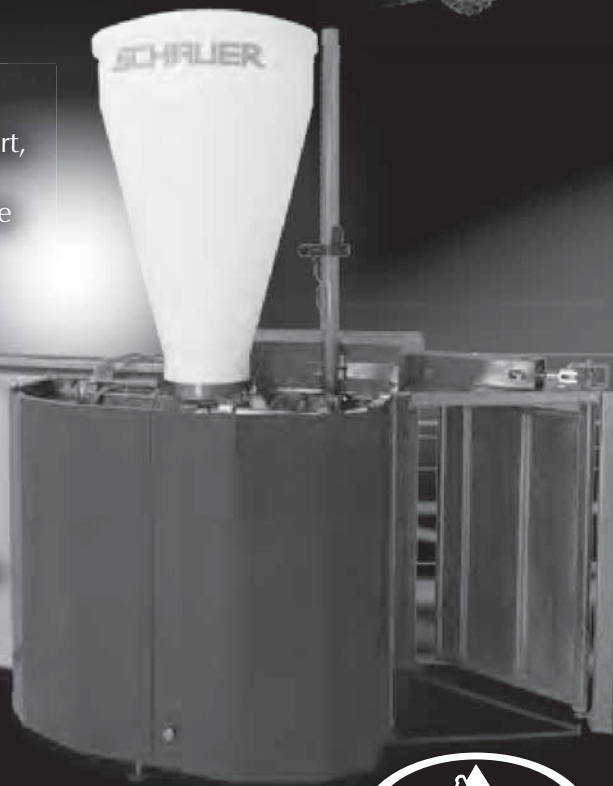
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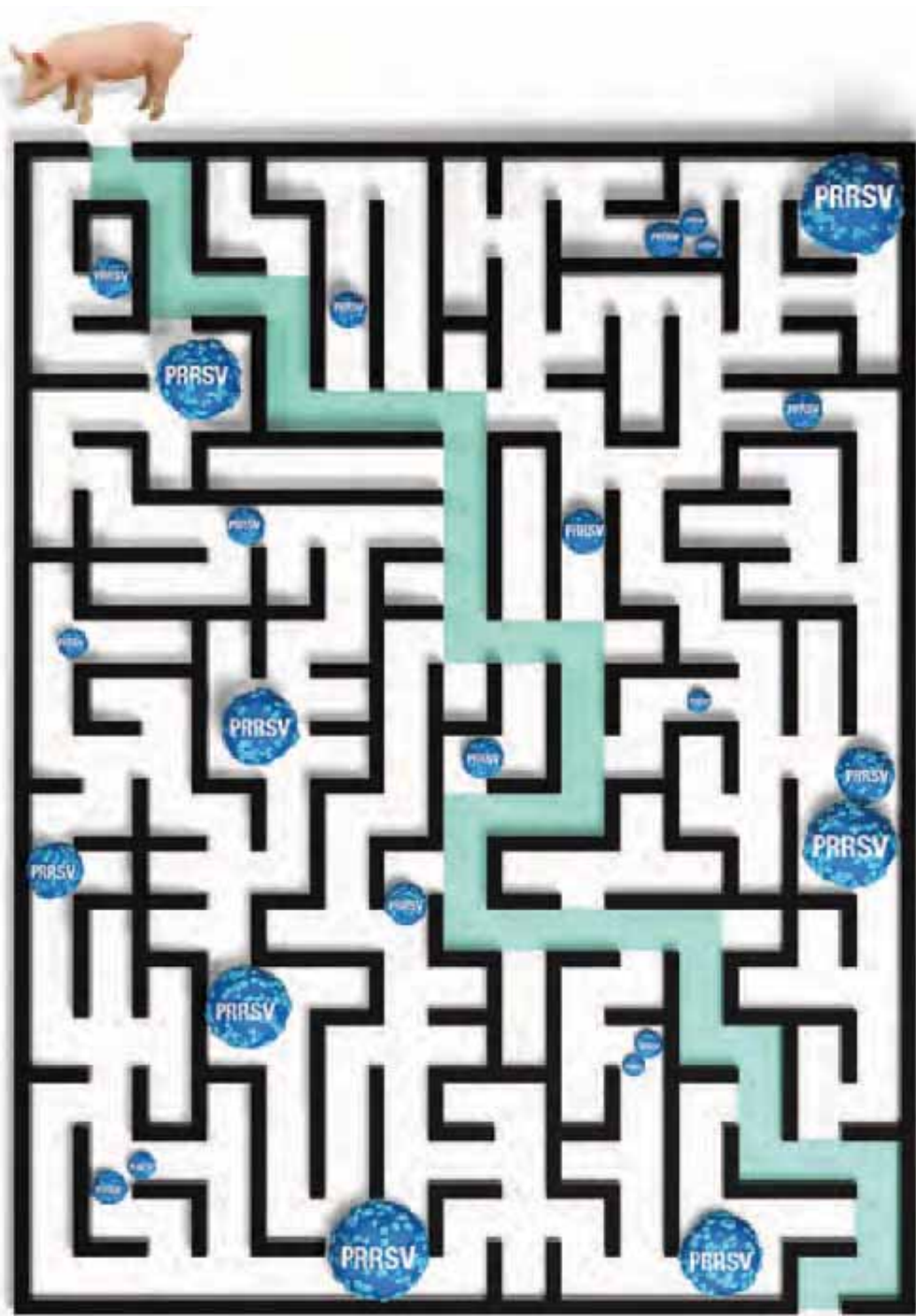
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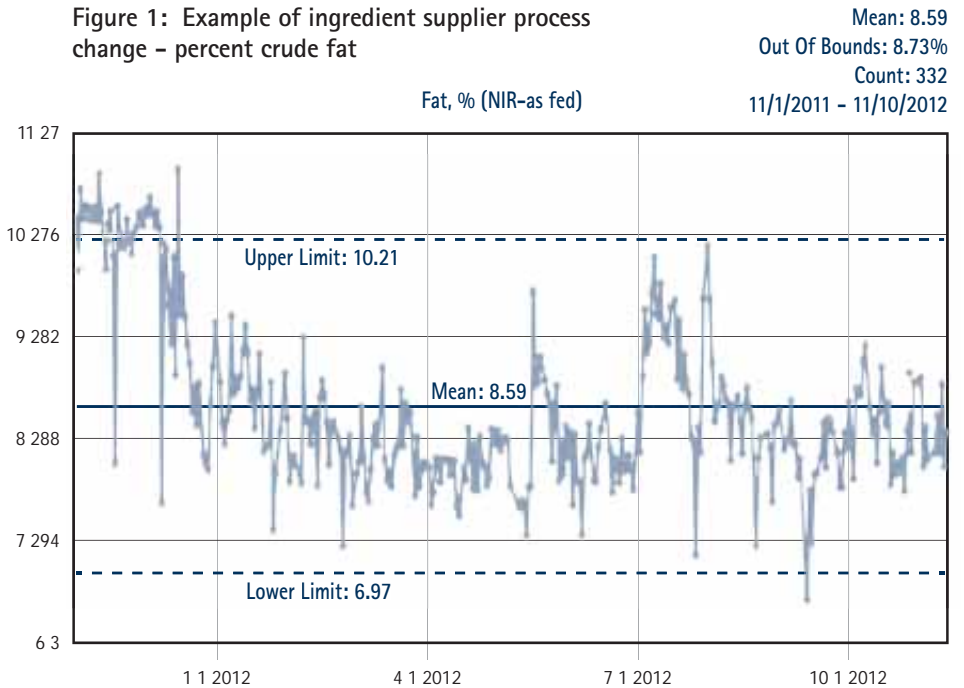
to help us understand the value of different materials from various sources. We also use it to check compliance with quoted specifications, and finally we use it as the basis for formulation.”

For purchasing and formulation, NIRS is used to observe nutrient trends in raw materials, either due to changes in the process carried out by the supplier or, for example, when changing from one season’s crop to the next. “Individual suppliers and supplier locations are compared and the data used for ‘shadow pricing’, whereby the value of the material in terms of its nutrients is compared to the price charged for the material,” Smith points out. “This allows purchasing to be carried out on the basis of the cost of nutrients, which means that the cheapest materials by weight will not always be the best value nutritionally.”

**“Different sources will also have different nutrient values for the same raw material”**

As an example of supplier monitoring, Smith showed data for corn DDGS from a specific plant, where crude fat content fell from 10.3% to 8.7% as changes were made to improve the efficiency of fat removal (Figure 1). “The graph


Figure 1: Example of ingredient supplier process change – percent crude fat



shows that there were several ‘blips’ due to plant maintenance or shutdown and overall a lot of variation,” he notes. “However, the supplier doesn’t always tell you what is going on so you can’t take advantage of, say, a high oil level. You also need to recognize when changes are likely to happen, for example when new harvest corn comes in.” Different sources will also have different nutrient values for the same raw material, for example, there can be a wide range of variation between different sources of DDGS. Demonstrating an example for a specific finisher diet, he said:

“This can lead to a difference in cost in the finished diet of \$8.24 in a \$300+ diet, and this is a lot!”

For materials like soybean meal and meat and bone meal, there is a specification that they must meet. “We monitor these to identify any product that is ‘out of bounds’, then inform the supplier,” says Smith. “We can use the NIRS data to make a claim for the value of the difference between the spec and the actual value. It’s not a good tool to use as a club, but we use it to influence suppliers and to help them to understand what their product is worth.”



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DFS Animal Nutrition has developed a database, called Datamaster, to handle the masses of information coming from the NIRS analyses and laboratory analyses. “Data can be imported directly from the NIRS machine, so that there is no dual entry of information and it also includes other, non-NIRS data,” explains Smith. It’s also web-based so can be accessed from anywhere and it has filtering capabilities to check the veracity of data. If a mistake is made, it’s identified and then odd results can be removed before adding to the database.” He notes that when dealing with so many analyses, accurate labelling of samples is vital so that there is very precise identification of each one.

Changes to feed formulations are made on the basis of the analytical data as new materials enter the mill. “This is mostly driven by product flow and changes are determined by how often you can justify a change in formulation,” comments Smith. “It’s also driven by economics and changes will be made if the value is significant.” He says that although they carry out shadow pricing continuously, it is difficult to segregate materials by bin and take advantage of differences in nutrient content, but doing so would add further value to the use of NIRS.

The main value in using NIRS comes from holding suppliers to claims, especially in the case of soybean meal, and in being more accurate in the feeding of key nutrients, Smith believes. “The NIRS machine can pay for itself very quickly, in some cases it could be less than a year,” he says. “Also, when feed costs are high, people are much more focussed on nutrient content, the cost of those nutrients and, of course, the performance of the feeds. Being able to fulfil their needs more accurately can certainly impact customer satisfaction.”

**Energy is expensive - measure it!**

Dr. Ruurd Zijlstra pointed out that 70-80% of diet cost is energy and that energy is used to formulate diets. He stressed the importance of accurate energy measurement, especially for the cereal component of the diet that provides most of its energy. “We know that bushel weight is totally unrelated to DE, in fact only 14% of the variation in energy content is explained by bushel weight,” he notes. “There is a good relationship ( $r = 0.85$ ) between Acid Detergent Fibre (ADF), measured by a chemical analysis, and energy content but the analysis takes five days, so this is not a practical route. Also fibre analysis is the most variable in terms of results and both lab to lab and within lab results are very variable, so it negates the value of the relationship formula.”

Dr. Zijlstra has been responsible for establishing the reference database, initially for wheat and barley, for the Alberta Feed Quality Evaluation Program. He has overcome the problem of variable results from chemical tests by using cannulated pigs for measuring energy digestibility, which can vary considerably. However, while this is very accurate, it is also

very expensive, costing \$1-2,000 per sample. “Therefore, we have worked mainly with an in vitro measurement,” Dr Zijlstra explains. “Using this methodology, we can mimic the digestion process in the stomach, small intestine and large intestine to measure the DE of cereals in the lab. The big advantage is that we can do many more analyses for the same cost as one analysis using a pig.”

Dr. Zijlstra has analysed more than 300 barley samples and says that the in vitro method is extremely accurate, so it can be used as a very accurate reference for NIR calibration. This overcomes the issue of which lab to use for chemical analysis, which is an important decision if that is the method used for



Dr. Ruurd Zijlstra, University of Alberta, who has developed the world’s largest database of energy measurements for wheat and barley

CONTINUED ON PAGE 44



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Paul Martin of Unity Scientific, demonstrates the use of NIRS equipment

calibration. “Chemical analysis may not be as accurate or consistent as you might think,” comments Mary Lou Swift. “You need to check how good the lab is by sending five samples from the same source and seeing how similar the analyses are. Not every lab can do everything well, so you may need to use different labs for different analyses.”

“We now have a very good database for barley and wheat and we are starting to work on pulses,” says Dr. Zijlstra. “There is not a better database in the world for wheat and barley!” he exclaims. The U of A calibrations are available to anyone via the manufacturers of the NIRS equipment. Commercial calibrations

can be purchased from the equipment manufacturers, who also have good databases for canola meal and DDGS. “If you buy a machine, you will have access to the calibrations, but will still need to continually add new data from your own and other people’s samples,” points out Dr. Zijlstra. “You should get an analysis done when you find an outlier, in other words a sample which is outside the normal range experienced.” Mary Lou Swift is helping to manage this process in Alberta and provides a network to link all the information coming out of the machines together.

**“Chemical analysis may not be as accurate or consistent as you might think”**

Funding for 27 machines has been approved so far as part of the ACIDF project and there is money for 10 more machines. Application forms are on the ACIDF website - [www.acidf.ca](http://www.acidf.ca) - and proposals with the highest impact will be successful. There is also a facility to analyse samples at the U of A, for \$10/sample so producers can access the technology even if they don’t have direct access to an NIR machine.

“We know NIRS works, now it’s time to use it,” concludes Dr. Zijlstra. “A lot of money has been invested in developing the system in Alberta and people need to take advantage of it.” ■



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# Canadian future worth JSR investment

By Dr. Grant Walling, Managing Director, JSR Genetics Limited



Grant Walling, Managing Director of UK-based JSR Genetics

Ask many people in the global pork industry about trading in Canada and they will comment on the difficulties facing pig producers in the country. They will undoubtedly highlight how high raw material prices have led to significant escalation in the feed price and how the ratio of feed price compared to pork price has changed unfavourably for pork producers over time. This has obviously been aided by the relative strengthening

of the Canadian dollar and the more challenging climate for export markets that has seen an oversupply of domestic pork produced in Canada. The decline of large scale pig production businesses in the country illustrates the difficulties and challenges of the Canadian market. Given all these facts you would expect that international businesses would be reluctant to invest in such a market, but you would be wrong. Canada remains an attractive proposition and has recently been the focus for JSR Genetics to locate a 650 sow nucleus outside their normal territory of the UK. The 650 sow nucleus unit is located at Elstow, just outside Saskatoon, and was purchased from the Prairie Swine Centre in 2009.

For global pig genetics businesses, Canada continues to meet many of the requirements for the supply of international orders. Despite the challenge of its physical size Canada has an excellent record for the prevention of notifiable diseases in the country and adequate controls to prevent them entering the pig population. In contrast, previous incidents of Foot and Mouth Disease in Europe as well as the progressive march of classical and African swine fever moving west from Eastern Europe remains a credible threat to the European supply of international breeding stock. Canada therefore represents a safe haven for breeding stock for European businesses looking to reduce their risk in the global breeding stock supply market. Canada also has a proven track record of supporting its export industry. The cost of health testing is typically lower than that in many European countries, meaning costs of overseas shipments remain competitive compared to supplying from other countries of origin.

When you also consider the number of countries with whom Canada has an active working health certificate for the trade of international breeding stock the proposition of investing in Canada is not as gloomy as many people have predicted.



JSR's 650-sow nucleus unit at Elstow, near Saskatoon

For a British company many aspects of the Canadian industry are a refreshing change. New build costs for pig units in developing markets such as Russia are now reaching € 5,000 (Can \$6,444) per sow on a breeding unit or € 320 (Can \$412) per square metre of finishing space. In contrast good quality pig facilities in Canada are significantly cheaper and more price accessible. The challenges of living, working and farming on a small island that we suffer in the UK, especially over planning issues due to peoples' reluctance to live close to pig farms are different to those experienced in Canada. Being a large spacious country with a significant proportion of arable land, the British challenges are less common. The larger land mass and hence a more spacious country does however create a different set of challenges. The availability of local staff with pig experience is limited, this coupled with the competition from other industries such as mining and the recent poor outlook for pig production in Canada means careers in pig businesses are not attractive.

In a country where levels of employment are relatively high compared to the current experience of many developed countries, a significant challenge to the Canadian pig industry

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is clearly going to be attracting a high calibre work force after a period of time when the outlook has been so negative. In common with most developed markets, the necessity to upskill and reskill existing workers to focus greater emphasis from traditional pig stockmanship to the management of systems responsible for animal and farm management means that the greatest challenge in Canada, as in many markets, is people. Good, committed and well trained people remain a successful business's greatest asset. For this reason JSR has the same commitment to training the Canadian team as it has to its UK employees and for some that has meant transatlantic travel to attend courses to ensure consistency of skills and training across the whole business regardless of where the staff are located in the world.

Consistency of operation is key to JSR, however all businesses have to recognise they have to adapt to different international markets. Running a nucleus operation in the UK is advantageous because, due to UK legislation, boars are routinely kept entire until slaughter. Despite the expectations, very few complaints are raised about boar taint possibly due to the relatively light slaughter weights achieved in the UK (up to 110kg live weight). In contrast, elsewhere in the world entire boars are heavily financially penalised at slaughter. There is increasing pressure in many developed markets for this to change especially in mainland Europe.

## The Next

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A shipment of breeding pigs destined for China being loaded

To remove the concern about taint JSR has been able to test its lines extensively in the UK and have a partnership with the University of Guelph working on genomic strategies to reduce the incidence of taint. Interestingly at this stage the data indicate changing sire lines alone can significantly reduce or increase the incidence of taint depending on the breed makeup of the terminal sire. It is likely that increased pressure will continue to focus on the practice of routine castration and within the next decade it is likely to become obsolete as technology nullifies the necessity for it to be commonplace on a modern farm.

The target destination of the JSR animals at Elstow is closely linked to the strategic goals of the company. Mexican and Brazilian markets are the main targets as these are much more accessible from Canada than from a European base. Of the Asian markets China and Vietnam offer the greatest opportunities and potential rewards as they go through a rapid period of growth and a transition from backyard farming to commercial pig production businesses. Having identified those key markets JSR still recognises that a nucleus facility runs best with some integration into the local market. For this reason, and mindful of current arrangements with another distributor in the territory, JSR is looking to link its nucleus to another pig business

in Canada to increase the level of integration. The targeted partner would be running their own multiplication facility and require a regular supply of prolific purebred animals from which to produce crossbred parents.

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**"Good, committed and well trained people remain a successful business's greatest asset"**

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Despite the challenges producers continue to experience in the Canadian industry, there is considerable room for optimism. Pork continues to be the world's most common source of meat protein and the level of consumption is growing significantly alongside the growth of fast moving economies in areas such as Russia and China. Despite significant increases in domestic production in these countries, the challenges suffered in the Canadian market means very competitive costs of production and high levels of efficiency, thus the industry is well placed to capitalise on global developments. This coupled with an excellent reputation for high standards of animal health and commitment to export markets means that any local pessimism in Canada is replaced with a global optimism for the Canadian pig market. ■

# Feeding solvent-extracted, yellow-coloured canola meal to weaned pigs

By Jose L. Landero<sup>1</sup>, Eduardo Beltranena<sup>1,2</sup>, and Ruurd T. Zijlstra<sup>1</sup>

<sup>1</sup>University of Alberta; <sup>2</sup>Alberta Agriculture and Rural Development

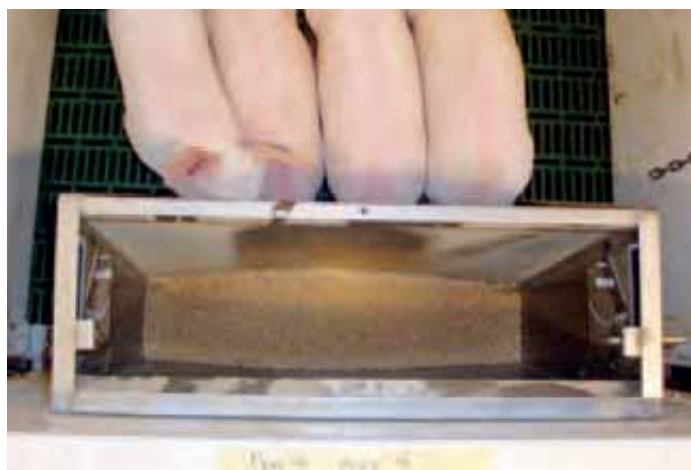
## Take home message

High feed commodity prices continue to stimulate the search for alternative local feedstuffs to reduce feed cost. Yellow-coloured canola meal is a co-product of solvent oil extraction of a novel variety of canola (*Brassica juncea*). *B. juncea* meal has lower fibre, but higher glucosinolate content than conventional, dark-seeded (*Brassica napus*) canola meal. Starting one week after weaning, we evaluated substituting soybean meal with *B. juncea* canola meal in diets for nursery pigs (7.7 kg). Pigs were fed diets containing 0, 6, 12, 18 or 24% *B. juncea* canola meal for 5 weeks. Increasing inclusion of *B. juncea* canola meal linearly reduced diet nutrient digestibility due to increasing fibre content. Growth performance of weaned pigs and trial end body weights were also gradually reduced by increasing meal inclusions due to greater sensitivity of young pigs to bitter gluconapin, the most abundant glucosinolate in *B. juncea* canola meal.

## Novel yellow-coloured canola meal

Canola meal is a co-product of the oilseed industry that produces oil for human food consumption. Previous research showed that locally-produced conventional canola meal derived from *Brassica napus* can be a cost-effective supplemental protein source in young pig feeds. We showed that imported soybean meal can be replaced with up to 20% solvent-extracted or expeller-pressed *B. napus* canola meal without reducing growth performance of weaned pigs. Producers may reduce feed cost by 10% including 20% expeller-pressed canola meal (10 – 15% residual oil) in weaner pig feeds.

A new canola meal that is derived from modern *Brassica juncea* is now available. *Brassica juncea* is a type of yellow mustard that has better disease resistance, heat and drought tolerance than conventional dark-seeded *B. napus* canola. *B. juncea* canola might become important for oil production on the Brown and Dark Brown soils of the southern Prairies, thereby increasing the availability of its meal. It might be a crop suitable for non-irrigated land in southern Alberta.



Pigs eating a diet with 18% *B. juncea* canola meal. One heavy and one light barrow and gilt were randomly placed into each pen for 4 pigs per pen

*B. juncea* canola meal has a thinner seed coat, therefore contains less hull fibre. Dietary fibre reduces nutrient digestibility and dilutes nutrient content. Therefore, *B. juncea* meal may have greater and more available nutrient content than conventional dark-seeded canola meal derived from *B. napus*.

CONTINUED ON PAGE 48

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Canola breeders initially reduced the glucosinolate content of rapeseed meal to <math><30\ \mu\text{mol/g}</math>, which was required to call it 'canola'. Over the last 30 years, breeders have further reduced meal glucosinolate content to 5 – 6  $\mu\text{mol/g}$ , which conventional canola meal typically tests now-a-days. *B. juncea* was recognized as a canola species more recently, but its glucosinolate content in the meal is about 2 to 3 times that of conventional dark-seeded *B. napus* meal. The higher glucosinolate content of modern *B. juncea* canola meal might negate the benefit that lower fibre would have on higher nutrient digestibility. More information regarding feeding *B. juncea* canola meal to young pigs was required.

## Nutrient profile of EP canola meal

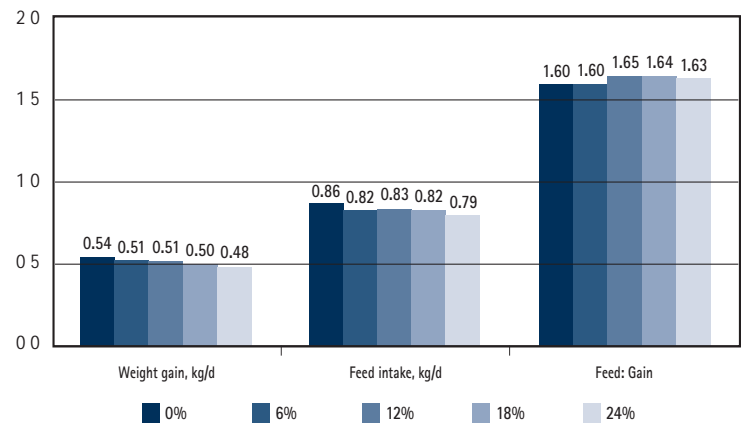
The solvent-extracted *B. juncea* canola meal fed to pigs in our trial was sourced from Bunge Canada (Altona, MB). The sample contained (as-is) 39% crude protein, 1.7% crude fat, 7.4% crude fibre, 2.0% lysine, 1.9% available lysine, 1.6% threonine, 0.7% methionine, 1.4% phosphorus, and 10.8  $\mu\text{mol/g}$  total glucosinolates.

## The weaned pig trial

The weaner pig trial was conducted at the Swine Research and Technology Centre of the University of Alberta in Edmonton. We evaluated the effects of feeding increasing feed levels of *B. juncea* canola meal (0, 6, 12, 18 or 24%) on diet nutrient digestibility and growth performance of weaned pigs. Weaned pigs were used because they are a more sensitive model for feed ingredient evaluation than grower-finisher hogs.

In total, 240 pigs with an initial weight of 7.7 kg were housed in 60 pens, 4 pigs in each. Pigs had free access to the assigned diet for 5 weeks. The experiment involved 2 feeding phases: Phase 3 test diets were cold-pelleted and provided to pigs for 2 weeks (days 0 to 14 of the trial), starting 1 week after weaning at ~20 d of age. Phase 4 test diets were steam-pelleted and fed for 3 weeks (days 15 to 35 of the trial). Diets fed were formulated to provide 2.4 and 2.3 Mcal NE/kg and 5.0 and 4.5 g SID lysine per Mcal NE, for Phase 3 and 4, respectively. Inclusion of *B. juncea* canola meal progressively replaced

Figure 1: Growth performance of weaned pigs fed increasing levels of *B. juncea* canola meal in the diet for 35 days, starting 1 week post-weaning



soybean meal in diets and NE value was adjusted including 5.6 to 8% and 2.6 to 5.0% canola oil in Phase 3 and 4 diets, respectively. Lactose at 5% and soy protein concentrate and herring meal at 3% were each included in Phase 3 diets. Specialty feedstuffs were excluded from Phase 4 test diets that were mostly wheat-based.

## Trial results

Increasing feed inclusion of *B. juncea* canola meal linearly reduced feed intake and therefore body weight gain, worsening feed conversion (Figure 1). Final trial body weights were 26.5, 25.6, 25.4, 25.2 and 24.6 kg for pigs fed 0, 6, 12, 18 and 24% *B. juncea* canola meal, respectively. The linear reductions in growth performance observed were likely due to greater sensitivity of young pigs to canola glucosinolates. Gluconapin was not only the most abundant (9.4 out of 10.8  $\mu\text{mol/g}$ ), but also bitter in *B. juncea* canola meal.

Increasing the dietary inclusion of *B. juncea* canola meal linearly decreased the digestible energy value of the diets and total tract digestibility of crude protein and energy for both feeding phases. The reduced nutrient digestibility was expected based on a progressive increase in dietary fibre content when soybean meal was replaced with *B. juncea* canola meal.

## Conclusion

Increasing inclusion of *B. juncea* canola meal linearly reduced diet nutrient digestibility due to increasing fibre content when substituting soybean meal. Growth performance of weaned pigs and trial end weights were also gradually reduced, likely due to greater sensitivity of young pigs to bitter gluconapin, the most abundant glucosinolate in *B. juncea* canola meal.

## Acknowledgments

Funding from Alberta Pork, Agriculture and Agri-Food Canada, and the Canola Council of Canada through the Growing Forward program is acknowledged. ■



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# Managing sows in groups – competitive feeding systems

Part of a series of articles produced by Prairie Swine Centre on the occasion of the 20th Anniversary and highlighting the advances in pork production made possible through the science of Ethology (applied animal behaviour).

By H. Gonyou, F. Lange

**Competition is a characteristic of the social system within a group of animals. In its simplest form we have dominant/subordinate relationships among the animals. The definition of dominance is that it results in priority of access to limited and defensible resources. Pig producers are generally comfortable with group housing if the resource (feed) is not limited: e.g. finishing pigs fed ad-lib. But sows are almost always limit fed to control their body condition, and so we have the possibility of competition. Our management of competitive systems is such that we attempt to reduce the dominant sows' ability to control the resource. We do this in two ways: social and physical management. We will look at different competitive systems and how they can be managed most effectively.**

We define competitive feeding systems as those in which an animal can obtain more feed by winning a fight. However, this does not necessarily mean that you will observe a lot of fighting in such a system. Often, the majority of fighting will occur within a couple of hours after mixing. Once a sow's dominance status has been established by aggression (fighting), it is often maintained by very subtle agonistic behaviour. These behaviours include threats through head movements and body posture by the dominant animals, and,

feeding systems, such as gated stalls and ESF stations, protect a sow while she is eating and eliminate the possibility of obtaining more feed by fighting.

## Floor feeding

Dominant sows have a distinct advantage in terms of feed intake and weight gain in floor feeding systems. Subordinate sows, which are also usually younger and lighter, will fall behind in body condition and may have to be removed. A 'relief' rate of 15% is common when floor feeding. Social management is the primary means of evening out feed intake in floor feeding systems. In non-competitive systems, such as finisher pigs, there is some advantage to having a significant variation in the size of the pigs. This is because the social system actually operates better with some variation, i.e. if there are many individuals of the same competitive status, there will be increased aggression until a hierarchy is established. The opposite is the case when dealing with competitive situations, especially situations of competition over feed. To ensure the most even feed intake among a group of sows, the sows should be as similar as possible, making them equally competitive. This will take the form of sorting sows by parity, weight and body condition. The result is a group of sows having the same feed requirement, and the same potential to compete for it. This sorting within a breeding cohort obviously results in smaller group sizes.

In order to have sows enter the system with similar body condition, it is advantageous to house them in stalls until confirmed pregnant (normally 35 days post-breeding) and feed them to achieve similar backfat levels by that time. Use of such 'breeding and implantation' stalls is particularly important for floor feeding systems as excessive competition and poor feed intake during this critical phase can affect reproduction.

In terms of physical management, it is possible to use some dividers within the pen to create several feeding sites. This is only possible with larger groups. In general, the feed should be spread about as much as possible (multiple drop sites), to prevent a sow from defending a large drop of feed.

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**"Dominant sows have a distinct advantage in terms of feed intake and weight gain in floor feeding systems"**

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for subordinate sows, moving in such a way as to avoid dominant animals. One study even referred to the social order among sows in a group to be one of 'avoidance' rather than 'dominance'. However, if a sow is able to obtain more feed by any of these means, it is a competitive feeding system. Some

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Dividers within the pens create several feeding areas in this floor feeding system in Ontario

Using bulky, high fibre feed will extend the feeding time and reduce the incidence of stereotypic behaviours, but may contribute to more aggression. Similarly, feeding on a straw bedded floor will extend feeding periods and increase aggression. Feeding a bulky diet ad-lib allows the subordinate sows to avoid peak feeding times and consume normal levels of feed, but it must be bulky enough to limit total energy intake.

**Keys to successful floor feeding:**

- Sort sows by parity, size and body condition
- Use the time in breeding/implantation stalls to even out body condition
- Spread feed as evenly as possible
- Use dividers within the pen
- Remove sows that fall behind

**Providing protection: non-gated feeding stalls**

As an alternative to floor feeding, producers should consider the use of feeding stalls in order to provide protection during eating. In this article we will only discuss non-gated (no back gate) systems, as gated stalls

will be discussed as a type of non-competitive feeding system in a future article. Recalling the earlier statement on dominance, we note that dominant animals will exert themselves when resources are both limited and defendable. Defendable refers to the ability of the dominant animal to control more than their share of the resource. Non-gated stalls prevent the dominant animal from monopolizing the feed by allowing the subordinate animals to defend a small portion of the total feed available, that is, their share of the feed. However, with enough effort dominant sows will be able to force a subordinate out of a non-gated stall and thereby obtain more feed.

Non-gated systems should make use of the social management techniques outlined for floor feeding (e.g. sorting by size and body condition). However, these systems also use physical methods to interfere with dominant sows attempting to displace subordinates from their feed. Non-gated stall systems use feed troughs so that the feed can be delivered and limited to a defined area. These troughs are divided so that individual allotments of feed are dropped into each division. Stalls are added to these divisions to

CONTINUED ON PAGE 52

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provide protection to each sow as she eats. The longer the stalls, which typically vary from shoulder length to full body length, the less aggression and the more even intake of feed. Floor feeding gives a distinct advantage to the dominant sow. Partial stalls reduce this advantage and allow the subordinate animals to spend more time eating and achieve a higher intake.

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### **"One of the easiest ways to increase the speed of eating is to provide wet feed"**

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Shorter stalls, such as those that only extend back to the animal's shoulders, will not fully protect a subordinate animal. In systems with these stalls, it is common to see cuts and scratches on the sides of the lower ranking individuals where the dominant sows have attempted to displace them from the feed trough. Longer stalls will provide more protection, but some displacement may still occur. If longer stalls are better, then why would a producer use short stalls? It is a balance between protection during feeding and the amount of space the system requires. Group housed sows should have a sufficient amount of free space (outside of the stall) to move about freely. If a producer uses long stalls, additional space is necessary behind the stalls to provide this loafing area. Longer stalls also represent a greater capital expense, in addition to the increased floor space.

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Are there other means to reduce aggression and displacements among sows in non-gated stall systems? There appear to be at least two: increasing the eating speed of the sows will reduce the time required to consume their feed and decrease feeding associated aggression. One of the easiest ways to increase the speed of eating is to provide wet feed, either as a slurry, or by adding water in the feed trough. By eating faster, the subordinate sows are nearly finished their feed by the time the dominant sow is able to displace them from the stall. Although reducing aggression and displacements, the rapid eating may increase other problems associated with short meals, such as increased stereotypic behaviour.

#### **Keys to successful non-gated stall systems:**

- Longer stalls will reduce aggression
- Wet diets take less time to consume and reduce aggression
- Trickle feeding prevents the accumulation of feed in front of slow-eating sows

The second method used to reduce displacements from short stalls is trickle feeding. Typically all of the feed for a sow is dropped into the trough at the same time. Faster eating sows consume their feed and then attempt to displace slower eating animals and steal their remaining feed. Trickle feeding meters the feed into the trough over an extended time, typically 30 minutes or so. Ideally, the rate of feed supply should be as slow as or slower than the eating speed of the slowest eating animal. If a faster eating animal decides to leave its stall to displace a slower eating one, no feed would have accumulated in the slower one's trough. The advantage to displacing another sow is lost. However, if the drop rate is the same as the eating speed of the faster eating sow, the slower eating animals will accumulate feed in their trough space and be vulnerable to attack from other sows. Trickle feeding has received mixed reviews. If it is well managed it may well reduce feeding associated aggression among sows. However, this is not always the case.

#### **Choosing between floor feeding and non-gated stalls**

Both systems are less expensive than the non-competitive gated stall and ESF feeding systems. Producers who use these systems are looking for a less expensive system and are prepared to accept more aggression and to give up some control over feed intake. If the producer is prepared to place a great deal of emphasis on social management, then they are more likely to choose floor feeding. It is the least expensive of all of the systems. However, if they find social management difficult, they may want to spend more and provide their animals with the partial protection of short, non-gated stalls. In larger operations, the decision may be based on the confidence the operator has in the ability of their staff to socially manage the animals. As in every system, better management will result in better production. ■

# Large-scale Alberta hog operation pilots traceability project

By Susan Joyal, M.Sc.

“Traceability is a crucial component of an effective animal health and food safety system. In an animal disease outbreak or emergency that could impact animal health such as a flood or fire, it is necessary to have access to up-to date information on where animals are, where they have been and what other animals they have come into contact with. Traceability in Alberta is based on the three fundamental pillars of premises identification, animal identification and animal movement.<sup>1</sup> In Canada, mandatory traceability systems are already in place for cattle, bison and sheep and the process is underway for pigs. So far, in Alberta, farm-to-slaughter swine movements are mandatory.



The radio-frequency identification (RFID) tags used on sows during the trial

**The Traceability Pilot Project is designed to evaluate and recommend ideal traceability technologies for key links in the supply chain that are practical and cost effective. Projects must be related to the traceability initiatives of age verification, animal identification, and livestock and product movement.**  
*(Excerpt from [www.growingforward.alberta.ca](http://www.growingforward.alberta.ca))*

Verus Swine Management Services provides full management, administration and technical support services for large scale investor-owned hog operations. Currently, Verus manages 18,000 sows in Western Canada. Thinking ahead and thinking big just comes naturally.

**"Farms spent, on average, about one-third fewer hours each week on data recording"**

So, when the opportunity to pilot a project on traceability presented itself, Martin Bowman, Director of Production, and his team stepped forward in a big way. With the financial support of Growing Forward and the commitment of their technology partner, PigCHAMP®, Verus dedicated half of their system, 9,000 sows (3 x 3,000-sow barns), to the project. Pinnacle Swine Inc., one of the investor-owned hog operations in the Verus system, led the pilot project, which got underway September 22, 2011 and ended October 31, 2012.

## Project objectives

1. Evaluate the practicality of using existing electronic data capture and transfer technologies (RFID tags and readers, companion software) to achieve and maintain compliance with the requirements for livestock traceability in Alberta.
2. Understand and report on the costs and potential benefits of using electronic data capture and transfer technologies (RFID tags and readers, companion software) designed to complement the requirements for livestock traceability in Alberta.

## Project activities

1. **Characterize current record keeping system** - Before electronic data capture was introduced, staff at each 3,000-sow barn tracked the minutes spent recording data on-farm for a month. The time spent correcting mistakes and faxing data to a remote bureau service for data entry was also tracked. Once the electronic data capture system had been in use for over six months, farm staff were asked, once again, to track the minutes spent recording data and correcting mistakes for a seven-day period.

CONTINUED ON PAGE 54



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5	36.24	68.14	90.99
5.5	39.87	63.96	100.09
6	43.49	69.77	109.19
6.5	47.12	75.59	118.29
7	50.74	81.40	127.39
7.5	54.37	87.22	136.49
<b>Cents per KWH</b>	<b>RETURN ON INVESTMENT IN MONTHS/YEARS</b>		
4.5	1.7	1.1	0.7
5	1.5	1.0	0.6
5.5	1.4	0.9	0.6
6	1.3	0.8	0.5
6.5	1.2	0.7	0.4
7	1.1	0.7	0.4
7.5	1.0	0.6	0.4

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The hand held data entry unit with extension antenna being used in the gestation barn

**Outcome:** At the start of the pilot project, before electronic data capture was implemented, the gilt multiplication unit (Dynamorc 1) averaged 25.4 hours per week on data recording, correcting and faxing. The commercial farms, which record less data because they produce only commercial pigs for slaughter, logged less time: 14.4 hours per week (Pinnacle 1) and 12.3 hours per week (Pinnacle 2.) A notable portion of that time, ranging from 9% to 23% depending on the farm, was spent faxing data sheets and correcting mistakes.

At the end of the pilot project, once electronic data capture had been in use for over six months, farms spent, on average, about one-third fewer hours each week on data recording. The tasks of correcting mistakes and faxing data sheets were virtually eliminated. Across all three farms, those saved hours were valued at just over \$16,000 annually, which was more than the additional cost of operating electronic data capture for all three farms, estimated at \$12,820 per year.

**2. Implement electronic capture and transfer system**  
**a. Tag breeding herd sows and gilts with RFID tags**

**Outcome:** In less than a month, and averaging just over one minute per sow, a total of 9,142 breeding herd females had an RFID tag in one ear. Not surprisingly, staff rated the experience as 'poor'; squeezing the handle of tag applicators so many times was tough on hands!

**b. Install software and tracking systems**

**Outcome:** In early March 2012, PigCHAMP® desktop software (Reproductive, Grow-Finish) and mobile software was installed on all three farms. The initial costs of installing electronic data capture equipment and software in this 9,000-sow system was \$8.54 per sow (includes electronic data capture equipment, RFIDs and

companion software.) Annual operating cost thereafter was estimated at \$1.42 per sow (includes replacement RFIDs and companion software.)

Early on in the project, farm managers asked if it would be possible to extend the reach of the handheld readers so that they could read the RFID ear tag when carrying out work at the back end of the sow (e.g. A.I., pregnancy checking.)

Because pigs are typically housed in close proximity to each other, RFID readers use low frequency to reduce the chance of reading the wrong tag. Low frequency means the reader must be placed close to the RFID tag to read, and that sometimes necessitates moving to the front of the sow to read her RFID tag before returning to the back end of the sow to do work. An external antenna (\$370), which plugged into the handheld reader and extended its reach, proved a great and timesaving remedy.

**c. Conduct employee training**

**Outcome:** A trainer from PigCHAMP® spent a day at each of the three farms instructing farm managers and workers on the use of mobile data capture equipment and software. Staff rated the experience as 'very good' and many were excited about trying out a system that promised to give them real-time access to accurate data while in the barn.

**3. Electronic data capture - on-going**

**d. Record RFID tag failures**

**Outcome:** Between March and October 2012, each farm reported only a dozen (or fewer) problems reading RFID tags (~0.25%). That's great news! Clearly, the technology of RFIDs has progressed in the last 25 years<sup>2</sup>.

**e. Random subset of RFIDs**

**Outcome:** The traceability initiatives of validating herd inventory, animal identification, animal age, and livestock movement were tested, twice (three months apart), in a specially designed exercise.

After syncing handhelds, farm managers generated a complete list of sow IDs, both on-farm and shipped

(culled or dead). From that list, a subset of 30 randomly generated IDs was created. Next, farm managers were asked to validate each sow's record by locating the sow on-farm (or on the shipping manifest, if shipped) and verifying whether or not the sow's real-life situation matched what was in the PigCHAMP® database.

Farm managers validated: "Identity" (sow tag), "Parity", "Status", "Transponder ID" and, if applicable, "Disposal date and reason." The result? All information on 179 of 180 sow IDs, randomly selected from a larger set of 14,803 IDs, was corroborated. It turns out the one "missing" sow had been moved to a cull pen and wasn't "found" until after the exercise was over. In the end, sows' real-life information corresponded exactly to the information recorded in the PigCHAMP® database.

**f. Producer / suppliers work Alberta's Swine Movement Database:**

**Outcome:** Electronic transfer of traceability data into Alberta's Swine Movement Database is still being developed. For that reason, transmission of e-manifests directly from the farms to the database was not performed during this pilot project. Nevertheless, an Alberta Swine Movement Database representative confirmed, "PigCHAMP® would be able to provide all the required information from their system."

**Key advantages**

In this pilot project, PigCHAMP® Mobile proved to be a practical and cost effective traceability technology for large-scale hog operations. Demonstrated advantages of using electronic data capture and RFIDs on-farm included:

- Improved capability and capacity for animal identification
- Improved capability and capacity to quickly conduct age-verification
- Improved ability to track livestock movements
- Improved accuracy and ease of inventory management

CONTINUED ON PAGE 56

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The hand held PigCHAMP Mobile unit being used for data entry in a farrowing room

- Improved decision making capabilities owing to quick access of real-time data
- Compliance with Alberta livestock movement traceability requirements

## Firsthand viewpoints

So what did farm staff think about electronic data capture? Well, 23 workers who'd worked directly with the handhelds were polled and asked to rate the system on a scale from 1 (very poor) to 5 (very good). The feedback was really positive: 3 (OK, 26%), 4 (Good, 52%) and 5 (Very good, 22%). That's quite a commendation - a system that saves time and money, improves data accuracy, worker efficiency and workers like using.

Perhaps the best testimony comes from Martin Bowman who added, "in the next year or so, we are considering converting another 6,000 sows to PigCHAMP® Mobile."

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## Conclusions

In unremarkable times, traceability is often regarded a 'necessary evil' – an extra burden and cost imposed by regulatory officials on an industry that rarely boasts of big profits. But that perspective can change in an instant.

A Foot and Mouth Disease (FMD) outbreak is almost always disastrous and very costly. The cost of the 2001 FMD outbreak in the United Kingdom has been estimated at 0.2% of Gross Domestic Product (between \$6.9B and \$13.3B).<sup>3</sup> In June 2010, pigs from a large, multi-site corporate farm in Saskatchewan were delivered to a primary processing plant in Red Deer, Alberta. After first detection of suspicious clinical signs, samples were taken and sent to two laboratories. At the same time, a series of inspections, quarantines and disinfections of the processing plant, source farm and transport trucks was carried out. All that was completed in less than 18 hours. Thankfully, the tests were negative for FMD.<sup>4</sup>

In nervous times, when there's a disease outbreak or a food recall, the spotlight is quickly recast onto traceability in Canada's food supply. Traceability can help sort through the chaos and assist in identifying the source of problems, accelerate an industry's return to 'business as usual' and restore consumer confidence, both at home and abroad.

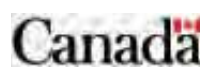
This pilot project demonstrated that it is possible to complement existing traceability initiatives by adopting modern technologies such as PigCHAMP® Mobile to enhance data management capabilities and comply with Alberta's Swine Movement Database requirements, and ultimately, Canada's. It's a forward step in this challenging business of modern food production.

## References

- 1 Traceability Division, Alberta Agriculture and Rural Development
- 2 See "The History of RFID technology" <http://www.rfidjournal.com/article/view/1338/2>
- 3 The United Kingdom Foot and Mouth Disease Crisis – Impact on Critical Infrastructure. Incident analysis IA06-001 (26 May 2006) <http://www.publicsafety.gc.ca/prg/em/ccirc/2006/ia06-001-eng.aspx>
- 4 A Review of the Animal Health Investigation at Red Deer, Alberta June 21-23, 2010. Charles Rhodes, B.Sc., DVM, M.Sc. October 2010. <http://www.swinehealth.ca/AnimalHealthInvestigationatRedDeer.pdf>

## Acknowledgements

This project was sponsored by Growing Forward, a federal-provincial-territorial initiative. ■



# Precision feeding: A revolution in feed management

Submitted by Swine Innovation Porc

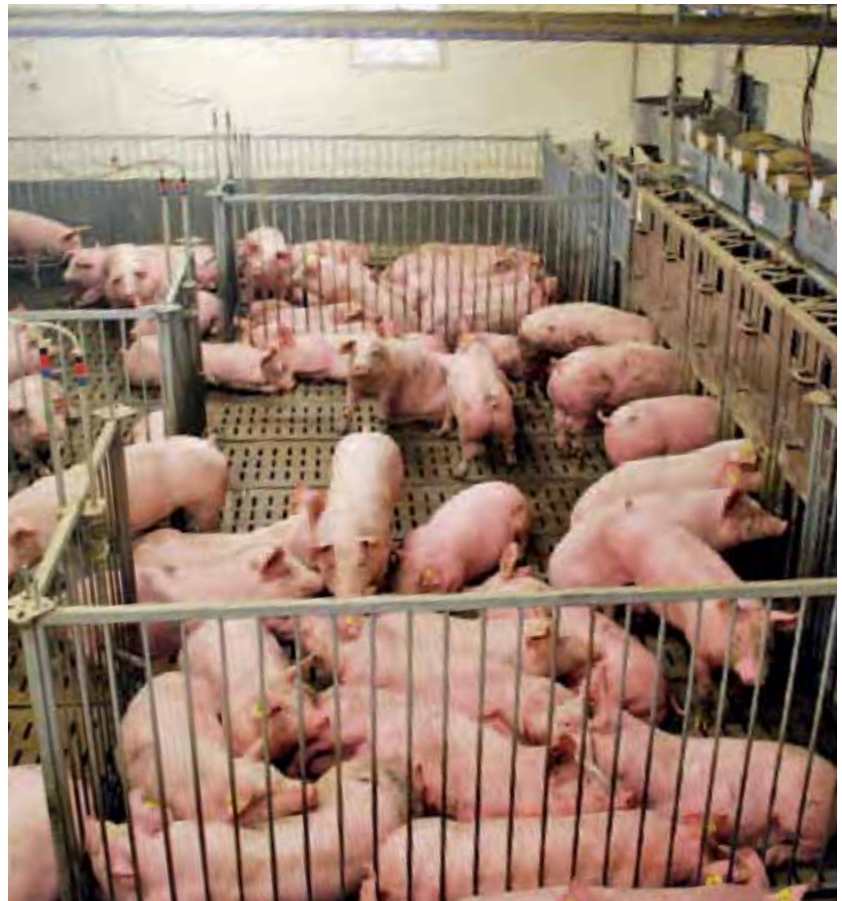
Candido Pomar, a researcher for Agriculture and Agri-Food Canada in Sherbrooke, together with his brother, Jesus Pomar at the University of Lleida, Spain (and several teams of researchers from other universities and five countries) are behind what promises to be a next opportunity in swine feeding; one that has the potential to transform how we feed pigs within the next five years. This team of researchers is striving to develop technology for feeding pigs individually, on a daily basis, rather than using a phase feeding program targeting the average pig in a pen.

## Innovation in pig feeding

Precision feeding techniques is an innovative approach to the feeding of growing pigs, enabling pigs to be fed daily on an individual basis, maximizing the growth potential of each pig. Current phase feeding programs are least-cost formulated and typically target average growth potential in a group or barn. The drawback with this approach is lost opportunity, with faster pigs being underfed and slow-growing pigs being overfed.

**"Feeding pigs based in individual intake and growth will revolutionize how we feed pigs in the future"**

In a given population, nutritional needs vary considerably from one pig to another and similarly, for each pig their needs change over time and according to their individual growth patterns. Estimation of nutritional needs should no longer be seen as a static characteristic of a population, but rather as an independently evolving dynamic process for each pig in the barn.



Precision feeding system with prototype feeding station.

CONTINUED ON PAGE 58

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## Results

Preliminary results of trials conducted at the research centre of Agriculture and Agri-Food Canada in Sherbrooke, Quebec, involved feeding pigs from 25 to 105 kg with rations adjusted to their daily needs. It showed that nitrogen and phosphorus intake was reduced by 25% and 29% respectively, while excretion of these same nutrients was reduced by nearly 40%.

What is the potential cost - benefit of this system? Transitioning from a standard phase-feeding program to an

individualized daily feeding system is expected to reduce feed costs by \$8 per pig. Additional savings can be realized for those farms with on-farm feed mills, as the precision feeding program would utilize two (blended) diets throughout the grower-finisher phase, increasing the milling capacity of the feed system. Cost savings would also be realized through more efficient use of phosphorus and amino acids, in turn reducing the nitrogen and phosphorus content in manure - resulting in lower application costs.

Looking at a whole farm analysis the potential of the precision feeding system could save producers up to \$14/pig, based on 2012 prices.

## Development and technology transfer

Implementation of a precision feeding system creates significant challenges with regard to the complexity (e.g. estimation of individual nutritional needs), reliability (e.g. on-farm use of electronic devices) and profitability, requiring new designs for equipment and software. Developing and testing the precision feeding system has been conducted by Dr. Candido Pomar at the Sherbrooke research centre, with additional funding from Canadian Agricultural Adaptation Council (Agriculture Council of Saskatchewan). Two demonstration sites, in Quebec and Saskatchewan, will be established for producers to view the technology first hand.

## Participating research centres and universities

Dairy and Swine Research and Development Centre (AAFC), Quebec; Université de Sherbrooke, Quebec; Université Laval, Quebec; Centre de développement du porc du Québec inc.; Prairie Swine Centre, Saskatchewan; Universitat Lleida, Spain; Institute i Tecnologia de Recerca Agroalimentàries (IRTA), Spain; Institut National de la Recherche Agronomique, France; Universidade Federal de Santa Maria, Brazil; University of Wisconsin-Madison, USA; and others.

## Canadian financial partners

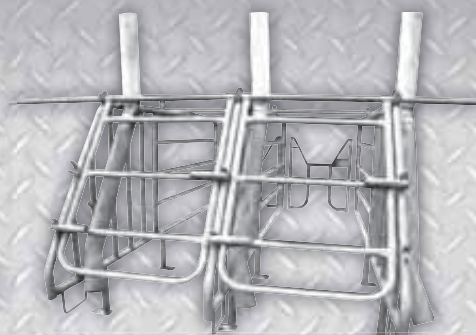
We also thank the Canadian financial partners in this project, without whose aid, could not be successfully carried out; Swine Innovation Porc, its private partners and Agriculture and Agri-Food Canada. ■

# LOOKING TO RENOVATE OR UPGRADE YOUR BARN?



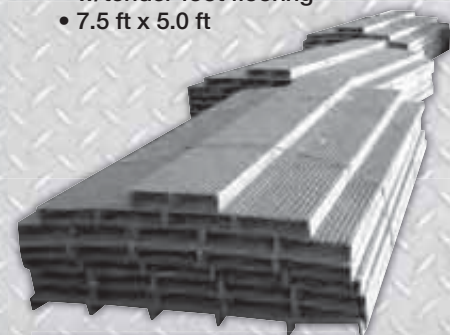
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## Swine Respiratory Disease (SRD)

By Dr. Egan Brockhoff, Prairie Swine Health Services, Red Deer, Alberta and University of Calgary Faculty of Veterinary Medicine, Calgary, Alberta.

### A leading cause of economic loss

Swine respiratory disease (SRD) continues to be a significant cause of economic losses in Canadian swine herds. How this loss presents in our herds often differs between farm and region depending on site specific and regional health status. The effect on your herd is most easily recognized through increased mortality and morbidity. However, the true impact is felt through decreased productivity and decreased market opportunity. Recently, we have witnessed an increase in discussion and awareness around the impacts of SRD and the associated challenges it presents to our entire value chain.

SRD is relatively common in Canadian herds. Like colds and flus, it is not a single disease, but a complex of respiratory problems caused by a combination of viruses, bacteria and mycoplasma. Based on my medical experience, SRD can cause fairly mild symptoms such as a sneeze or cough, or quite severe symptoms with pleuritis, pneumonia and fluid in the lungs of swine. When there is a combination of virus/bacteria or mycoplasma, it is sometimes referred to as enzootic pneumonia (with mycoplasma involved) or as porcine respiratory disease complex (PRDC).

The disease syndrome that is referred to as SRD includes a variety of bacterial pathogens:

1. *Actinobacillus pleuropneumoniae*: called APP or pleuropneumonia
2. *Pasteurella multocida*: called pasteurella or pneumonic pasteurellosis
3. *Haemophilus parasuis*: called HPS or Glassers Disease

From my experience and work in the field, SRD is a dynamic complex that may also include bacterial pathogens such as *Streptococcus suis* and *Actinobacillus suis*. Currently we are working on better understanding the role *Actinobacillus suis* plays in SRD and increased chest adhesions. Recognizing the unique finger print that is made evident at each site due to this complex mixing of pathogens helps veterinarians and producers better understand and adapt unique measures around treatment and prevention. Figure 1 (Normal), Figure 2 (Mild SRD) and Figure 3 (Severe SRD) demonstrates the stark contrast between a normal lung, one that is mildly affected with HPS and that of a severely affected lung presenting with a diverse mix of bacterial and viral pathogens leading to chronic extensive pneumonia and pleuritis.

In Canada, both coughing and breathing difficulty has been reported as a significant clinical observation within the nursery population. In a case-control study reported by Young in 2000, 36.8 percent of nurseries had coughing and 31.6 percent of nurseries



Figure 1: Normal pink lung



Figure 2: Left middle lobe affected with HPS surrounded by normal pink lung



Figure 3: Severe extensive bacterial pneumonia with pleuritis and focal chest adhesions complicated by PRRS virus

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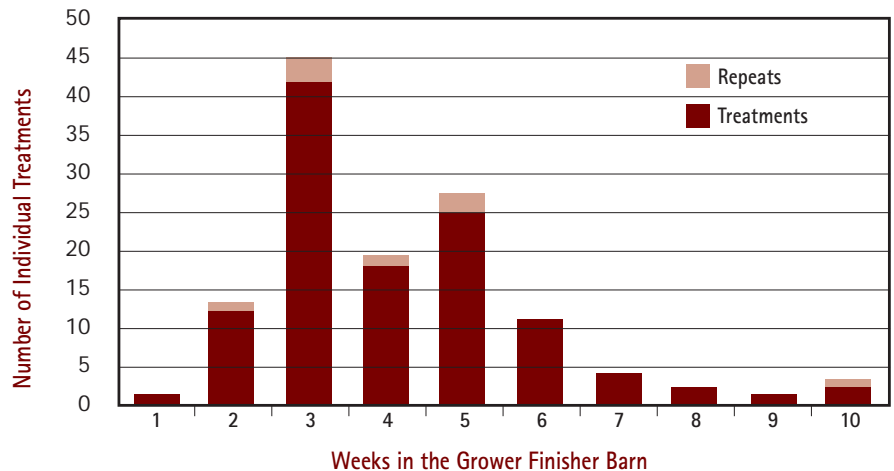
had breathing difficulty.<sup>1</sup> Similar challenges are recognized throughout the global pork industry. In the United States, SRD is the prevalent cause of nursery pig and grower/finisher deaths. According to the National Animal Health Monitoring System, the percentage of grower finisher pig deaths attributable to respiratory problems increased from 39.1 percent in 2000 to 61.1 percent in 2006.<sup>2</sup> The relationship between nursery health and performance to the subsequent grower finisher performance has been well established. Our experience has shown that the ability to recognize and resolve respiratory concerns in the nursery in a timely and effective manner translates to greater health and performance as those pigs move forward.

**"Swine Respiratory Disease can increase feed costs by adding up to 6 additional days to market"**

In Ontario,<sup>3</sup> researchers who collected tonsil and nasal samples from weaned pigs in 50 Ontario herds in 2007 found APP was prevalent (extent or proportion in the population) in approximately 78 percent of cases, HPS in nearly all of the herds sample (48/50) or about 96 percent tested positive, while PM was only found in 2 percent of herds. This project illustrated for veterinarians the diverse nature of respiratory pathogens within our Canadian herds and the potential challenges of both primary and opportunistic invaders. Moreover, it speaks of the broad mix of pathogens associated with SRD present within a single site or single pig.

Viruses, bacteria and mycoplasma can work alone or together. Many, such as porcine circovirus and mycoplasma

Figure 4: Epidemiological Individual Disease Treatment Curve associated with SRD



hyopneumoniae, can up-regulate one another while others simply work in tandem.<sup>4</sup> There are many factors associated with a disease outbreak in a herd that was previously stable for SRD: stress of co-mingling, shipping, weather or temperature fluctuations, ventilation problems, overcrowding, viral co-infections like PRRS, influenza or other lung infections like mycoplasma can all lend themselves alone or in concert to the destabilization of a previously stable herd. In the case of HPS, the introduction of a group of non-exposed (naïve) population of pigs into a group that is carrying HPS can infect the naïve pigs, leading to severe disease and high mortality. Consequentially, those once naïve pigs now become a risk to the previously stable population by shedding large amounts of HPS that may overwhelm the previously stable and immune pigs.

SRD can cause significant economic loss. Our work at Prairie Swine Health Services (PSHS) and that of researchers<sup>5</sup> have found that SRD can increase feed costs by adding up to 6 additional days to market. The University of Auburn swine management guide suggested that chronic respiratory disease costs \$1.50 to \$2.50 per pig and can decrease growth (worsen



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Figure 5: Lung affected with HPS Glassers Disease

feed conversion) by 10-13 percent. SRD can add 6-14 days to market and 2 percent (or more) to grower mortality. The biggest cost is not only from pigs that are lost, but also from the added days that are required to get the pigs that were sick and then recovered up to market weight.

### Choosing antibiotics for treatment

Since pneumonia can reduce pig growth rates<sup>6</sup> by as much as 8 percent, veterinarians and producers need products that work quickly to get their pigs back to health. Antibiotics can kill or inhibit the major bacteria associated with SRD. When used properly they can control or eliminate bacterial pathogens from affected pigs and populations. The importance of individual animal treatment cannot be understated in those affected populations. Most often, the first impact of SRD is decreased feed and water intake. Although antibiotics can be delivered effectively through both feed and water, it is important to remember that individual pigs may not have sufficient intakes to provide themselves with therapeutic levels. Individual animal treatment remains the most effective way to ensure the appropriate antibiotic reaches the appropriate tissues and pathogens in a timely manner.

At PSHS, we see a diverse cross section of swine respiratory disease affecting all varieties of herd types and flows. As I mentioned earlier, every farm has a unique finger print and through

diagnostics, clinical assessments, genetic history and farm level experiences we can better understand the unique characteristics of the barns classic disease expression and pathogen flow - a medical history if you will. Figure 4 illustrates a typical disease treatment curve following the movement of animals into a grow-finish barn from their nursery. As is common during times of stress, unplanned mixing, or from the introduction of a viral disease such as influenza, we can see instability develops. This 2000 head continuous flow site became affected with an outbreak of HPS serotype 13 (Figure 5). The result was an increase in mortality

and fallbacks. Like many farms, this site did not have the capability of using a water medicator in the grow-finish barn and there was no timely way to incorporate feed medication into the diet. As a veterinarian, our goal is to maximize quality of care in the best interest of the animals and our clients. Having an established medical history with this site, understanding what antibiotics would work in this case and being able to recognize the outbreak early allowed us to take the appropriate steps. You can see from this graph that not only did we select an effective treatment we were also able to avoid treating the entire population. The right

CONTINUED ON PAGE 62

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Antibiotics can affect individual bacteria by weakening or slowing them (bacteriostatic) or by killing them (bactericidal). With diseases where the animal is severely weakened the bactericidal antibiotics have the advantage of helping to relieve the animal's immune system from doing all the work. In cases of bacterial septicemia or severe challenges the selection of bactericidal antibiotics is an important consideration.

**"The goal of any health program should be to empower your team to take action as early as possible in the disease process"**

Antibiotics can be time-dependent (kill bacteria over time – over several days or weeks) or they can be concentration-dependent.<sup>7</sup> Concentration-dependent antibiotics kill bacteria based on a high concentration at the site of infection over time. Instead of requiring a

prolonged time to have an effect on a population of bacteria, these antibiotics hit the bacteria population all at once, in a concentrated wave. The advantage of concentration-dependent antibiotics is that, if dosed properly, they may only need to be given once for the offending bacteria to be killed. These antibiotics tend to, but not always, have a shorter withdrawal time and have the advantage that the producer can tell quickly that the pigs are getting better.

Compliance can be a significant challenge with individual animal treatment protocols in large populations. The goal of any health program should be to empower your team to take action as early as possible in the disease process, thus mitigating the effects of disease on both the individual and the population. The benefits of a single dose antibiotic for the producer include reduced pig handling, reduced worker stress, reduced needle use and a program that is more likely to have a positive impact on the pigs' health. Increased compliance allows us to better maximize quality of care!

SRD continues to be a significant challenge along the pork production value chain. The ability to understand what pathogens are present and the impact they are having on your herd is an important first step to effectively preventing and controlling SRD. The importance of individual animal treatment within a herd is well

recognized. Early intervention with an appropriate antibiotic can reduce the spread of pathogens, improve recovery and decrease the necessity of mass medication. ■

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# International Round-up

## New welfare assessment for English pig farms

The English pig industry is planning a quantum leap in Red Tractor ethical pig production – by letting the pigs themselves show whether they are healthy and happy. Rather than look at animal welfare through human eyes, the industry's 'Real Welfare' initiative will in effect listen to what the pigs have to say about their surroundings, reports the magazine Pig World.

With the help of a team of specially trained pig vets, Real Welfare will be rolled out to most pig farms during 2013 and it will become part of the 'Red Tractor' quality assurance scheme from April. It will ensure that pigs on farms producing around 90 percent of English pigs are regularly checked for health and contentment.

"Real Welfare is based on what the pig itself shows us, rather than the environment it is kept in," explained the British Pig Industry Executive (BPEX), which has funded three years of research

on the scheme at the universities of Bristol and Newcastle.

The aim has been to apply scientific principles to animal welfare by checking the following key indicators of animal wellbeing:

- Tail lesions
- Body marks
- Lameness
- Environmental enrichment
- Hospital care

Real Welfare assessments will be carried out by vets as part of the independent Red Tractor quality assurance audits. The audits will be standardised so that pig producers can check their pig unit's performance against an industry-wide database. The veterinary assessments will highlight any areas of weakness on a farm, helping producers to understand what actions they need to take to improve their standards of ethical pig production.

While the Real Welfare initiative will impose extra cost, time and management responsibilities on English pig producers, it

will cement the Red Tractor pig scheme as the world's most advanced independently-audited whole-chain assurance program, believes BPEX. And it will ensure shoppers who choose the Red Tractor logo are buying bacon and pork from farms with high ethical standards.

## Novel insect protein could be used in pig diets

A recently announced project aims to develop novel insect-derived feed protein that could help replace expensive soybean meal and fishmeal in poultry and pig diets.

The project involves entomologists, biochemists and nutritionists, combining the expertise within British animal feed company ABN with that of scientists at New Zealand's Food and Environment Research Agency (Fera).

Insect larvae will be grown on organic waste materials, then processed for use in animal feeds and initially evaluated in poultry.



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## International Round-up

"With global protein supply currently struggling to keep up with worldwide demand and protein prices sky-high this year as a result, there's a real need to develop new, sustainable alternatives," explains ABN technical director Angela Booth. "This project is an exciting opportunity to see if the highly digestible protein in insect larvae could help meet that need.

"As a bonus, the organic waste substrate is reduced in mass by around 50%, and can be used as a valuable fertilizer," she adds.

The aim is to have a viable pilot-scale production system up and running by the end of the three-year project. In addition to overcoming the technical production challenges, a strong focus will be placed on evaluating the feed's nutritional value and its suitability for use as an animal feed, especially in relation to consumer acceptability.

### Phosphorus digestibility higher in fermented soybean meal

University of Illinois researchers have found that pigs digest the phosphorus in fermented soybean meal better than phosphorus in conventional soybean meal. Fermented soybean meal is already considered a promising substitute for fish meal in weanling pig diets because of its

protein content, lower cost, and lack of anti-nutritional factors.

### "Fermentation is almost as effective as the enzyme phytase at releasing phosphorus"

"Most of the phosphorus in soybean meal is bound to phytate, so it's not available to pigs," explains animal sciences professor Hans Stein.

Previous research by Stein's group found that pigs digest the phosphorus in fermented corn more easily than that in non-fermented corn. "Fermentation releases phosphorus from the phytate molecule," Stein says.

In this study, Stein and his team looked at whether fermented soybean meal (FSBM) offered the same advantage. They observed that the standardized total tract digestibility of phosphorus in FSBM is 65.5%, compared with only 46.1% in conventional soybean meal. When the enzyme phytase was added to the diets, the digestibility of phosphorus in FSBM increased slightly to 71.9%, whereas phosphorus digestibility in conventional soybean meal increased to 71.4%.

"In conventional soybean meal, the majority of the phosphorus was bound in phytate, but the phytase enzyme released much of the phytate-bound

phosphorus," Stein explains. "That is why the digestibility increased so much when we added phytase to conventional soybean meal. But in FSBM, fermentation had already released much of the phosphorus from phytate so adding phytase did not improve digestibility very much."

These results show that fermentation is almost as effective as the enzyme phytase at releasing phosphorus. Producers can save money on phosphorus by using fermented soybean meal.

"If swine producers use fermented soybean meal without phytase, they can use a greater digestibility value for phosphorus than if they use conventional soybean meal. Therefore, they need less supplemental phosphorus from other sources in the diets to meet the requirement of the pig," Stein says.

### UK bans advertising for antibiotics

The advertisement of antimicrobial medicines to farmers in the UK will be banned from 2013 in a bid to reduce antimicrobial resistance in humans and animals.

The change comes as a result of the European Commission's view that the UK did not "correctly transpose" the EU Directive which prohibits the advertising of certain medicinal products to the general public.

CONTINUED ON PAGE 66



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## International Round-up **Continued**

The move has received mixed response from the industry with some organisations “disappointed” by the decision.

National Farmers Union animal health and welfare adviser Catherine McLaughlin believed, as an industry, farmers and vets were going to have to find different ways to open up dialogue. However, she stressed vets had a part to play in the responsible use of medicines. “Vets have a part to play in responsible prescribing and should feel confident enough in their dialogue to say why they are prescribing a product.”

However, the British Veterinary Association (BVA) welcomed the decision, saying advertising antimicrobials put “undue pressure on veterinary surgeons”.

BVA president Peter Jones said: “New antimicrobials are heavily advertised by pharmaceutical companies and there can be undue pressure put on veterinary surgeons by clients who want to try new products that promise good results, but which may not be appropriate from the point of view of responsible use.”

“Ultimately, it is the veterinary surgeon who will make the decision on which

veterinary products to use and vets will continue to work with their farm clients to ensure antimicrobials are used prudently and responsibly.”

### **Low protein diets increase intramuscular fat**

Feeding a low-protein diet supplemented with lysine to pigs from 40 to 115kg resulted in growth similar to the normal protein control diet but with more intramuscular fat, according to researchers based in the UK and Italy. However, six per cent more feed was needed to produce 1kg of liveweight gain over the period for the lysine-supplemented pigs than for the controls, which the authors attributed to deficiencies of other amino acids.

The EU nitrate directive and the increasing cost of protein sources are leading farmers to reduce the nitrogen content in livestock feed, say researcher Lutz Bünger of the Scottish Agricultural College in Edinburgh, UK and his co-authors. In a recent paper they explain that UK pig production often

employs high-protein rations to ensure high growth rate and low fat deposition.

The aim of the work they reported was to compare the performance of pigs of a lean genotype fed with a conventional diet or one of two low-protein diets, one with and one without lysine supplementation.

### **“Pigs on the low protein diet with added lysine had a lower average daily weight gain and higher feed conversion ratio”**

A total of 64 animals on each diet were reared from 40 to 115kg and fed ad-libitum. Liveweights and feed intake were recorded and after slaughter backfat thickness was measured and samples of loin muscle were analysed for total fatty acids. Pen-based data were analysed examining diet and batch as the main factors.

There were no significant diet effects on feed intake. Pigs on the low protein diet with added lysine had a lower average daily weight gain and higher feed conversion ratio (FCR) than the two other diets from 60kg onwards.

Between diet strategies, there were no significant differences in backfat thickness but body fat deposition was higher in the low protein diet with added lysine group, followed by the low protein diet without additional lysine, with the control group being the lowest.

These results confirm that the low protein diet with added lysine strategy allows growth performance similar to the control diet but with 11 per cent more intramuscular fat, concluded the researchers. Pigs on the low protein diet without added lysine diet show an increase in body fat and intramuscular fat, although subcutaneous fat thickness was little affected, they note. Low protein diets with added lysine reduced nitrogen intake by 11 to 15 percent compared to the control and can be achieved without compromising the growth performance. However, added Bünger and co-authors, feed conversion was significantly poorer (by six per cent) than the control diet, probably due to amino acid deficiencies. ■



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## View from Europe

# No antibiotic growth promoters – Where next?

Across the world the restricted use of antibiotic growth promoters (AGPs) is causing pig producers a headache, notes British consultant and journalist John Gadd. Many governments have already legislated against their use, or are about to do so, in order to reduce the risk of antibiotic resistance in human medicine, he notes. Bemused by the number of alternative growth enhancers now being marketed producers are finding it difficult to make a choice. In this article, he attempts to take a step back and look at the situation with some practical suggestions.

### Separating the men from the boys

Easier said than done! It takes patience and some pertinent questions asked of those companies enthusiastically promoting their products. As many of the questions as possible in Table 1 must be answered satisfactorily before any technologically-viable short-list can be constructed. It may not be possible for every manufacturer to provide full answers, as it takes time and money for them to be established, especially if the product is new to the market. But the salesperson or sales literature should be able to respond honestly (in either a positive or negative way). If negative, (ie. too many answers such as “we have insufficient information yet”) then pass on – I find most dedicated pig producers are quite capable of making such a judgement from the way the questions are answered.

### A comparative AGP target from the past.

Whatever alternative growth enhancer we choose to buy, we need to remind ourselves how cost-effective a good, proven,

long-established AGP product has been in the past, so that we can compare it with any new alternative. Results for familiar antibiotic growth promoters are available from dose-response trials on both research and commercial pig farms. I have filed dozens of such trials over the years and looked at them on a commercial return basis using, firstly, REO (Return on the Extra Outlay needed). The best of them yielded a 4 or 5:1 return at market weight. That is a tough standard to attain and very few, if any, of the suggested AGP replacers available so far can match it. However a 5:1 payback seems a good benchmark against which to compare product claims – not just for AGP replacers but in any performance area, such as genetic improvements, worm remedies, disinfectants, vaccines and nutritional ingredients and so on – not just growth promoters.

The second check is to calculate any extra MTF (saleable ie. deadweight) meat obtained from each tonne of feed used.

The need for this follow-up to REO I will explain later.

CONTINUED ON PAGE 68

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**Table 1: Seven useful questions to ask the feed/ feed additive salesperson**

- How many properly controlled feeding tests do you have on your product?** Four or five seem too few; statisticians advise 20 as a minimum, but this many does take time and money to acquire, so use your judgement on the number and quality on those you are shown.
- How many of these tests have no negative controls?** Every performance trial should have a negative control.
- Can you provide a list of references to support these first two questions?** Unpublished company results can be suspect; it is tempting to show only the successful results.
- How many times out of ten did the product improve performance?** Statisticians advise 70% or more positives. No negative responses at all are suspect.
- How wide was the variation in these responses?** Can you supply coefficients of variation with them? The lower the percentage CV, the more close together are the data points (the results) to each other, and vice versa. Statisticians say variations around 50% should be acceptable.
- What dosage of the product should maximize my return on my investment?** Ask the company what would be the return on half, and again double, their recommended level. Dose-response evidence is a good test of a new product or system.
- Can you supply performance models so as to predict a likely response under my particular conditions?** Not an essential question, but useful if the answer is 'yes'. If so, this allows a buyer to put the performance advantages alongside other options for change and to compare their added value potential.

**Take a step back**

Maybe this is a good time to step back from all this talk of comparisons and consider whether it is more profitable – in its truest sense – to examine spending your time, effort and money on what management practices we can look at again to help promote lean growth.

I am not saying you shouldn't try out some AGP replacers, but I suggest you also have a look at some management practices which could have got a bit rusty over the years. Some of them from my clients records suggest that such an approach could yield economic benefits which together easily exceed any 5:1 return. Table 2 gives some of these findings.

**Comparisons which mean more than just FCE and ADG**

How can we compare products and systems easily and meaningfully? By keeping an eye on Meat per Tonne of Food (MTF) as well as REO. As we are “producers of good quality meat” the most cost-effective performance yardstick to use is lean growth – not liveweight growth or feed conversion or even cost per kilo of gain. Instead, saleable Meat per Tonne of Feed, MTF, is a much better measurement of slaughter pig performance – for two reasons. First because it is simple to calculate (see Table 3) as it combines physical performance with a large amount of likely return. FCR and ADG (growth rate) do not, and cost/kg liveweight gain only deals with cost and doesn't cover return. Secondly because MTF can be established from office records – no need to go out on the farm and measure/weigh things. Several leading pig companies are adopting this more modern approach.

**Table 2: Some REOs and MTFs from published trial work or taken from client's records (1999 – 2012)**

These are, of course, not additive but they do give an idea of what management areas to examine as well as thinking what might be the best AGP replacer to buy.

Subject	REO	MTF increase (kg)	Extra income t/feed
FSD buying method	3:1*	12.0	+18%
Less overcrowding	2.1:1*	17.0	+12%
Checking feeder space	26:1	21.2	n/a
More feeder space**	10:1	27	n/a
Correct temperature	12:1	18	+12 %
Feeding latest creeps	2.8:1*	29	+19%
Correct sanitation	17:1	n/a	+5.3%
Formal off-farm training***	5:1	n/a	+30%

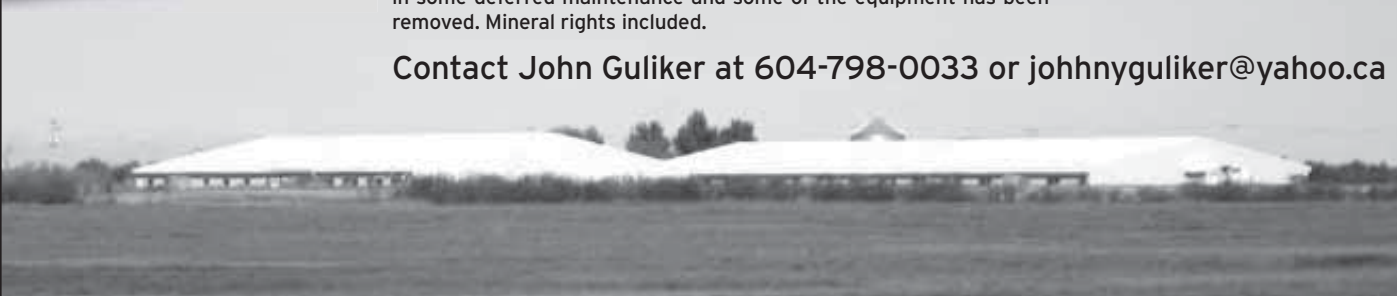
**Notes:** n/a: Not available from the farm records.  
 Extra income figures have been estimated.  
 \*These REOs look low due to high input costs early in the pigs' life, but this boost to the pigs' genetic capability early on can result in much enhanced performance to slaughter. So always follow what looks to be low REO with an MTF calculation.  
 The FSD concept results are due to the pigs' more efficient use of the feed purchased all through to slaughter.  
 \*\* Providing extra feeder space for 14 days post weaning.  
 \*\*\* Breeding farm staff. From the extra pigs reared after 2 years compared to two years before - a significant boost to income for the same cost.

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## Why MTF is an advisable follow-up to REO

Sometimes REOs are disappointingly low when the input cost is high and this can put people off. A good example would be reducing stocking density to recommended levels, which can give an REO of 2.1:1, which is low because housing cost per pig rises pro rata. Another is feeding the latest, more expensive creep feeds (REO 2.8:1). Again, the new Farm Specific Diet buying method (REO 3.0:1) elevates cost/tonne. It is essential to check these and others out with an associated MTF figure as the 'expensive extra outlay investment early on in the pig's life comes good – very good – by slaughter weight in terms of more saleable meat obtained from the feed consumed. Table 3 shows examples of how REO and MTF interact and illustrates this from real farm results.

**Table 3: How to calculate MTF**

- |  |
|--|
| (1) Establish how many pigs are produced per tonne of feed eaten to market weigh. Say 300kg eaten per pig. $1000 \div 300 = 3.33$ pigs/tonne.  |
| (2) Calculate the saleable meat produced per pig across the growth period, say from 24 to 124 kg. Eg. 100 kg liveweight put on x 80% killing-out percent = 80 kg deadweight per pig. |
| (3) $MTF = 3.33 \text{ pigs} \times 80\text{kg} = 266.4\text{kg Meat per Tonne of Feed}$   |

## MTF can go further

Establishing an MTF figure for any product or management system has a useful linkage with the cost per tonne of the feed being used, what I call 'price per tonne equivalent' - PPTE. Suppose the extra MTF from the product trialled was 20 kg. At C\$ 1.70 kg deadweight, this means the product earned another  $1.70 \times 20 = \text{C}\$34$  on each tonne of feed used. This is equivalent to a C\$ 34/tonne reduction in its cost, about a 10% reduction at the time of writing.

## Summary

**Here is a modern way to compare commercial products, especially those added to feed:**

1. Use the questions provided to narrow the choice of options and identify the more likely 'men from the boys'.
2. If the vendor hasn't provided you with REO and/or MTF figures for their product or system, use what looks to be the more reliable trial evidence to establish for yourself an REO for each product on your shortlist. Choose the highest REO, but if the REO looks low, do not necessarily discard it as it may be due to the product or system being expensive early in the pig's productive life. Follow it with a MTF calculation, as by market weight the result could turn out to be very favourable in extra income. If you wish, go on to relate this result on a PPTE basis to see how much, in equivalent terms, it could reduce the cost per tonne of the feed you are currently using. ■



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# Danish producers get their annual technical update

By Stuart Lumb

Danish pig producers are extremely efficient, using highly prolific breeding stock, quality feed, modern buildings and state of the art equipment. The research carried out by the Danes, along with the network of advisers to disseminate new data is the envy of many of its international competitors. Good communications and knowledge transfer are vital for producers to keep up to speed and Denmark is probably the only country where the entire industry meets annually to be updated and technically refreshed. Around 2000 pig industry personnel descend on Herning, Jutland, each October to listen to presentations, to network and to enjoy excellent food culminating in a dinner at which all 2000 delegates sit down en masse and are fed simultaneously – a caterer’s nightmare – but it all works amazingly well.

The Danish pig industry labour force is now multinational with many workers coming from Eastern Europe and Russia. Consequently on many units English is used for communication purposes. Because of this, one day of the Congress is devoted entirely to presentations given in English. In terms of this year’s papers, there was nothing revolutionary, but reinforcement of working practices which can slip a bit over time is no bad thing. Here is some information from a selection of the presentations.



Technical information and advice is disseminated to Danish pig producers through a network of advisers

## Farrowing management for large litters

Danish sows are noted for their prolificacy, but it can bring problems. This presentation focused on the sow at farrowing. Presenters Sonke Muller and Flemming Thorup said that prior to farrowing:

- sows should be neither fat nor thin
- should be healthy and stand up at feeding time

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- should have had the correct vaccinations to ensure adequate antibody content in the colostrum
- sows should not have problems with stomach ulcers.

Good records are a prerequisite of any well run pig business. Litter data highlights the fact that older sows often have more stillborn piglets. In any case sows with above average stillbirths per litter need special attention and a red card above the farrowing crate is a simple but very effective reminder to staff to give that sow extra attention. Clean and dry farrowing accommodation kept at the right temperature is very important and sows must be given straw so they can exhibit a degree of nest building behaviour. One person should be checking the sows at farrowing. Problem sows need checking every 30 minutes and sows should be checked every 2 hours up to 4 piglets farrowed, then after 4 pigs born, checked every 60 minutes. In a trial, giving extra attention at farrowing did reduce the number of stillbirths.

It may sound obvious, but pay attention to the low birth weight piglets as they are most likely not to survive and they must get the all-important colostrum. Fostering is standard practice because of the large litters that Danish sows produce. Two-step fostering was described. Here a 3 week old litter is weaned, fed solid and liquid feed and, critically, kept warm in a boxed in creep. Seven day old piglets from the same litter are then fostered on to the sow that's been farrowed for 3 weeks, leaving the sow that's been farrowed 7 days to take piglets from 4-5 newly farrowed sows, making sure that fostering takes place after those piglets have suckled colostrum. Generally piglets must stay 12 hours to get the colostrum, although bigger pigs can be moved after 6 hours.

The rainbow piglet – or maybe it should be the rainbow litter! This is a very simple idea to make sure sick piglets don't get treated twice and helps management a lot when different staff are in the farrowing house, like at the weekend. Piglets get spray marked with different colours for each day they are treated, usually using red, green and blue in rotation. Piglets get a black mark after routine treatments.

Small pigs are identified by using red clothes pegs. In the morning the farrowing house attendant puts 12 red clothes pegs in their pocket. When a runt piglet is located it's spray marked and a peg is put above the mother. Having a peg above the sow saves a lot of time when looking for those piglets again. When there are no more pegs left, those 12 marked pigs are put on a foster sow. A trial of this technique resulted in a 98% survival rate. But beware – pray that your wife doesn't find out who pinched her pegs! In conclusion, adopting the techniques discussed will increase piglet liveability.

### Improving feed efficiency in the sow unit by 10%

It's vital to make efficient use of feed at any time, but currently with our savage feed prices this paper is very relevant. This trial, reported by Gunner Sorensen, was carried out on 8 farms with sow numbers ranging from 450 up to 1,700.

CONTINUED ON PAGE 72

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## View from Europe continued

Amazingly, feed consumed per sow can vary from 1.2 tonnes/sow/year to 2.2, so many farms have scope to reduce feed intake. The paper indicated that feed could be saved in the gilt phase. As far as the sow is concerned, getting the right body condition is critical and this can be measured by feel or by using a back fat scanner. This is carried out just after service, at 30 and 70 days post service and at farrowing. Body condition should be condition score 3 which equates to 15-16 mm of backfat. Feeding in lactation should be according to the litter size, peaking at 18 days post farrowing and declining slightly as weaning approaches.

### "Body condition should be condition score 3 which equates to 15-16 mm of backfat"

The results of the trial were that feed was saved. Sows were smaller and stronger with less leg problems and fewer sows were culled.

**Author's comments:** Saving feed is vital. Personally I would target the finishing herd as that's where the bulk of feed is used and therefore there is scope for most savings. Trying to save sow feed can be a double-edged sword. Danish sows are pig producing machines. Trimming lactation feed can be false economy especially if the sow ends up milking off her back, loses too much weight and then won't come back on heat. "Penny wise, pound foolish" as the old saying goes.....

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Older readers will be familiar with the term "Thin Sow Syndrome". In the UK in the late 1960s, sow stalls and tethers had just become the norm and Dr Geoff Lodge, a researcher at Nottingham University decreed that pregnant sows could live happily on 2kg of feed per day. Critically, he forgot to add that this was for sows kept in well insulated, well stocked, warm stall houses, not for sows housed in draughty yards or those kept extensively in outdoor systems, exposed to the elements. This is how the term "Thin Sow Syndrome" came into being. Undoubtedly feed can be saved in the breeding herd, but producers need to be very careful and be very mindful of the consequences if over zealousness creeps in.

### Efficient service of sows and gilts

For a successful breeding farm, everything starts with conception, according to presenter Claus Hansen. The standard 5-point plan for heat detection is as follows:

1. Pushing in the flanks with the hand or knee
2. Lifting the inguinal folds
3. Pushing under the vulva
4. Back pressure
5. Riding test

The optimum time to inseminate is 10 hours before ovulation, but of course it's very difficult to hit the exact time. Sows vary in oestrus length - it can be short, medium or long.

For gilts, the service plan is unique to each farm. Age is the vital factor, not size or weight. Sufficient light is essential - 100 lux, 16 hours per day. Gilts that don't show oestrus 10 weeks after boar contact must be culled. Hansen pointed out that because gilts have a short oestrus they need to be checked for oestrus twice daily and are inseminated twice in the day.

Post-cervical insemination (PCI) is not quicker than the use of a regular catheter and it also currently illegal in Denmark, says Hansen. However a recent trial has evaluated its use with lower sperm doses than regular insemination.

**Table 1: Comparison of conventional insemination with post cervical insemination using 0.76 or 0.5 billion sperm**

	Control (2bn sperm)	PCI 0.75bn	PCI 0.5bn
Litters	2793	2807	2684
Farrowing rate (%)	90.2	91.3	88.9
Litter size, total born	16.5	16.3	16.2

The researchers concluded that using PCI results in a slightly lower litter size and that the additional cost is 1.87 DKr (\$0.33)

The Congress is a marvellous talking shop. How many pig technicians in other countries get the chance to get away from their pigs in order to listen to scientific presentations and be updated on all the latest industry developments. The Danish philosophy is to share and when I pause to ponder, I'm honoured that I was invited to share new knowledge and enjoy good companionship and fabulous food with my Danish industry counterparts. ■

## Business as usual: Danes focus on global trading

Pig prices in Europe are climbing as supplies tighten, which is welcome news to struggling producers. However, feed costs continue to escalate and are unlikely to fall until the next harvest, thus creating a catch 22 situation. And, with new welfare codes that outlaw intensive stall and tether systems, industry observers have mixed views on how the market will shape up during the next 12 months. But, despite the challenges, the Danish industry is optimistic about the future and even planning expansion. British journalist Jane Jordan reports on how the Danish industry views its future.

Despite facing the same challenges as pig producers around the world, the Danish pig sector is cautiously optimistic. The industry is feeling the effects of a volatile global market and production has fallen by two percent in Denmark during



Karsten Flemin, with the Danish Agriculture & Food Council, predicts a positive future for the Danish industry

the past year, down from 29.4 million head in 2011 to 28.9 million head for 2012. But predictions reveal no change during 2013, which bucks the general European trend. All other EU nations are forecast to see a decline in pig production of between one and five per cent - totalling an overall fall of two per cent for 2013 across the EU.

"It is a very pessimistic outlook, but Denmark expects to retain production into 2013," says Karsten Flemin, Senior Consultant (Market Analysis), Danish Agriculture & Food Council (DAFC), confidently.

The Danes have worked hard to protect their industry because economically, pig production has national significance. The sector has safeguarded traditional export markets such as the UK. Many of its breeding herds have fulfilled the UK's higher welfare standards for a decade and all farms are fully compliant with the new EU sow welfare legislation, introduced in January.

The money markets have helped, benefiting exports, but last year led to concerns. Although Denmark is not in the Eurozone, the uncertainty surrounding the Euro could still have an impact - particularly if stronger 'at risk' nations, such as Italy and Spain default. If this happens the entire EU economy could suffer, not only those linked by the Euro.

But the European pork market is not Denmark's focus. With plans to increase domestic production by at least two



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CONTINUED ON PAGE 74



## View from Europe continued

million pigs a year, its sights are set worldwide. With the world population booming and greater affluence coming to developing nations, the demand for pigmeat will be sustained. And, in the long term, this should create greater stability.

“EU pigmeat production will decline in the next few years, but good demand will come from key third countries and that is where our industry must focus. Apart from slight dips in production, such as those being seen now, favourable opportunities will come out of what is likely to be a more stable global pigmeat market of the future,” explains Mr. Flemin.

### Potential continues

Although pigmeat production in developing nations continues to rise significantly year on year, the Danes believe there is huge potential for exports and will be for some time to come. China has seen domestic pigmeat production increase from 49.5 million tonnes in 2011 to 52.4 million tonnes in 2012. However, disease challenges, increasing feed costs and food security issues are having an impact and market analysts say China will continue to rely on imported meat for the foreseeable future.

“Pigmeat imports are increasing in key regions and places like China and Japan are seeing steady growth. But food safety is a major issue for these consumers and our pigmeat fulfils their requirements. There are significant opportunities for our products out there,” says Mr. Flemin.



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Another valuable outlet for Denmark is Russia, which is aiming for self-sufficiency. However, Mr. Flemin says disease problems, lack of investment and increasing pressures on resources, will curb expansion, so for now the Danish export trade here looks settled. Even so, other pig producing nations such as the US and Brazil, could threaten this trade.

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### “The European pig sector faces immense challenges going forward, but the Danes are more optimistic than most”

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South America could also have an impact and Brazil is the one to watch, says Mr Flemin.

Brazilian export opportunities are opening up due to investment and improvements in health status in certain regions. The eradication of FMD in certain areas is making it a favourable supplier to net importers in the Far East and, with lower production costs and abundant labour, they are very competitive, so that could put pressure on net exporters.

### Stronger profit potential

The European pig sector faces immense challenges going forward, but the Danes are more optimistic than most. For now, producers want some assurance that prices will improve, and they will not be disappointed. Currently, DAFC is predicting a rise of around 1DK Kr/kg (\$0.17) for 2013, with perhaps peak prices being seen in the third quarter of the year as pork demand increases. But, with pigs in short supply across Europe, then returns may be better for some. However, feed price will continue to dictate profitability, says Mr. Flemin.

“It remains our most significant input, but as most of our producers grow their own feed, it puts them in a stronger position as they do not have to compete on the high priced global market,” he adds.

More than two thirds of Danish producers can, to some degree, regulate feed price by transferring grain into their pig enterprise at the cost of production. This offers a considerable benefit in terms of margins per kg pigmeat produced.

However, the difficulty for those farms currently losing money has been deciding whether to retain their cereals and feed them to pigs, or to take advantage of the very strong grain market. That’s been a tough call for many farm businesses, says Mr. Flemin. Even so, he says profit is expected next year and that will be a consequence of Denmark’s more integrated approach. “Some of our producers have made money this year, but only a few. And these farms will be in a good position to improve profitability next year,” he adds.

Overall the Danish pig industry appears stable. Yes, it faces competition, but Mr. Flemin believes it is in a strong position to secure market share on the global scale. Demand will shape its future, as it will the whole global pigmeat market and now is the time to invest, trade and take a stake in the future. ■

## More slaughter pigs, more profits, say the Danes

With profits low or non-existent, the prospect of even higher feed prices to come and a market faced with uncertainty, the Danes have decided they want more control of their own pigmeat production chain. With plans to invest DKK1.6Bn (\$276 million) in pig rearing and finishing farms, it hopes to secure a more profitable future for farmers, processors and thousands of agricultural workers. British journalist Jane Jordan reports on this ambitious plan.

Herning's renowned pig congress, held in Jutland during October, was alive with enthusiasm - a remarkable achievement considering the dire state of EU pig production. The reason is that Denmark's pig industry has engineered a novel scheme to save its own bacon. It plans to create 500,000 more pig finishing places within its domestic production sector and gain greater control of its 'value chain'.

The primary objective is to fill slaughter lines, which are currently running under capacity in spite of considerable rationalisation. The initiative will also secure more than 3,000 meat sector jobs and put the Danish pig sector in a stronger position to compete in the global arena, and open up the already lucrative Asian and Chinese export markets.

A joint declaration between Danish pig producers and processors was announced during the conference. It's backed by all sectors of the pigmeat chain and also has the support of Denmark's leading food trade union, NFF. In simple terms the initiative will encourage producers to decommission old buildings in favour of modern, high-tech, environmentally - proven alternatives. Breeding herds will be urged to invest in finishing accommodation and rear more of their own pigs to slaughter rather than export 30kg weaners to Germany.

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**"Investment in its domestic finishing sector is vital if Denmark is to maintain current slaughter capacities"**

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### Some guarantee

But putting the proposal into practice all hangs on Government support. The current economic climate is not stimulating investment and it's difficult for farmers to secure capital. To expand production the industry needs support. It is pushing for a form of loan guarantee and/or grant aid scheme, underwritten by the Government, that will help bring down costs and stimulate growth.

Asger Krogsgaard, chairman of the Svinslagteriforum (SSF), the Danish Food and Agriculture Council, says it is time for

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## View from Europe Continued

the Danish pig industry to regain control. "Investment in its domestic finishing sector is vital if Denmark is to maintain current slaughter capacities," he says, noting that that processors could handle at least a 25% increase in slaughter capacity. "There is scope for expansion and increasing Denmark's slaughter pig production makes economic sense, we need to take greater control of our chain and add value to it."

But diverting two million or more weaners a year away from export markets and into Danish finishing units may not be easy. German finishers will be concerned because they rely heavily on imported Danish weaners. They will be reluctant to lose a primary source of high health, high quality pigs and German processors will be eager to secure supplies. With EU weaner prices set to rise significantly following the EU ban on intensive sow housing which came into force on 01 January 2013, the possibility of more than two million Danish porkers now staying at home could further upset Europe's pig market. Weaners are in short supply, values will get higher and that may be too tempting for many Danish producers to ignore. The German weaner market is currently worth about DKK2.4bn (\$42m) to the Danish pig sector and convincing producers to forego a strong weaner price in favour of finishing their own pigs might prove a challenge - especially against a backdrop of rising feed and energy costs, a shortage of skilled labour and weighty environmental tariffs.



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## Environmental scope

From an environmental perspective the Danes are confident that raising more pigs will not mean more problems. Around \$3.5 million a year is spent on environmental research and scientists say that increases to pig production efficiency and the enormous technical advances made to production systems has significantly reduced the overall environmental impact of pig production. Evidence suggests it is half that recorded in 1985, when initial regulations were put in place to control nitrate pollution and emissions, so there is scope for expansion within the country's 'green' framework.

## An effective solution?

So, will two million more slaughter pigs a year save Denmark's bacon? Yes, I think it will. The co-operative nature of the Danish pig industry will make this initiative work. Denmark is committed to its pig industry, has a strong and successful global brand and the opportunity to take greater control of their 'value chain' makes sense - it will benefit everyone in the industry because they are all in it together.

With the processing sector currently operating under capacity, this move is played at the right time. While everyone else in Europe is hung up about rising costs and cutting production, the Danes are looking at expansion, job security and a larger share of the global pork market. Greater trade with Asia and



Danish processors could increase throughput by 25% if more pigs are finished rather than being exported (photo courtesy DAFC)

China should ensure the additional Danish pigmeat produced has a secure and lucrative market. ■



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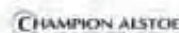
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