

Western Hog **JOURNAL**

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Cover Photo

Danish producers are close to completing the transition to group housing such as this free access stall system (see Stuart Lumb's article in *View from Europe*).



Cooler nights for nursery pigs

Page 43

Editor's Notes.....	4
News and Views.....	6
Industry Viewpoint.....	14
London Swine Conference	
Value-added pork production: What strategies are working today?.....	18
Quality Meat Packers' brand stories.....	23
Energy management in swine barns.....	24
The nutrition and economics of feeding entire males.....	27
Pressure on conventional agriculture.....	32
Special Features	
Pork production costs in Europe, Canada and Brazil.....	36
Cooler nights for nursery pigs cuts costs.....	42
Foreign worker programs see important changes over the past years.....	44
Effective use of PG 600® in gilt management.....	47
Feeding lentil to weaned pigs.....	52
Health	
Reap the benefits of improving welfare on your farm.....	56
Swine Dysentery: is our old friend back?.....	58
International Round-up.....	61
View from Europe	
Doing a farm trial – thoughts from the sharp end.....	64
Danes look to the future.....	67
Ad Index.....	70



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Editor's Notes

In North America, pressure from lobby groups regarding the use of sow stalls is starting to increase. Seven US states have banned sow stalls through voter ballots, while Maine, Colorado and Oregon have banned them through state legislative initiatives. Although the time scale for this change varies, there is little doubt that such legislation will be enacted. In response to public and economic pressures, some of the larger pork production businesses in the USA are making changes to their sow housing or have committed to doing so.

From January 1st 2013, producers in the EU will not be allowed to use sow stalls except for four weeks after breeding. Australian producers have agreed to move to group housing by 2017, while New Zealand will complete the move by 2015. While Canada does not export much pork to the EU, Australia is its fourth largest market by value and combined with New Zealand accounts for \$144 million worth of trade out of the total pork export value of just over one billion dollars. There is already lobbying by producers to ensure that imported pork is produced on farms with group sow housing. As time goes on there will be increasing barriers to trade based on production systems. What will all this mean for Canadian pork exports?

Against this background, Manitoba Pork's commitment to "encouraging its producers to phase out by 2025, the style of sow stalls currently used" appears far-sighted. The reality is that, in time, economic pressure from export markets and consumer pressure, probably via the retailers, will drive the move towards group housing. Although 2025 seems a long way off, 14 years is not a lot of time to replace or convert existing sow housing. The need for change could arise even sooner than that.

While there has been some good research into alternative sow housing systems, notably at the Prairie Swine Centre, the information available to producers is nowhere near comprehensive enough for them to decide which system is most suitable for their operation, how to design new housing or how to convert existing barns. If the evolution towards group sow housing is to take place without reducing performance or compromising pig welfare, then research establishments and industry organizations will need to invest a lot more money and expertise into providing solutions for producers. ■

Bonnie Peck

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Identification of sick pigs is as easy as ABC

Pigs respond better to treatment when they are treated earlier, and a new program from Pfizer provides training and tools to Canadian swine producers for identifying sick pigs. The ABC Pig training program – offered exclusively through veterinarians – provides a simple system to identify and quantify pigs in acute, sub-acute and chronic stages of disease.

Pfizer Animal Health works with Canadian swine veterinarians to deliver the ABC Pig training program to producers across Canada. The workshop focuses on learning to identify pigs based on the classification as an A pig, B pig or C pig, and understand how well each type responds to treatment. A 30-minute training video provides the basics, and producers then practice the ABC concept and

receive on-farm tools to put the program to work on their operation.

“When we teach producers to identify sick pigs earlier – as an A pig that is just showing disease symptoms – the treatment choices are much more likely to lead to better responses,” says Walter Heuser, DVM, Swine Business Unit Director for Pfizer Animal Health. “Timely treatment makes better use of producers’ time and money, and works to keep productive, healthier animals in the herd.”

The ABC Pig training program delivers a framework and system for identifying sick pigs and is a practical element of a larger Pfizer initiative called Individual Pig Care – where the concept of assessing and treating each pig individually to ensure they have the right treatment at the right time was established in the Walking the Pens seminars.

ABC Pig training is available through your Pfizer representative and herd veterinarian.

For more information contact Simon Grudzien, Swine Product Manager at Pfizer Animal Health on 514-693-4396 or email simon.grudzien@pfizer.com.

Feedlogic launches FeedMeter product line

Willmar, Minn. – based Feedlogic Corporation has recently launched FeedMeter, a new system which allows real-time measurement of feed usage on-farm. FeedMeter’s core technology is an entirely new process to measure the mass flow of feed through a standard feed line. The patent-pending system uses a simple, low-maintenance device which attaches to a feed line and uses unique software to calculate mass flow and record the data.

Information generated by the FeedMeter can be used to monitor feed disappearance, detect feed bridging and feed outages, and manage feed bin inventories. It will provide important diagnostic information to help producers spot feed wastage and ensure the right feed is being fed to the right animals.

FeedMeter uses new telemetry technology to push data automatically to the Internet where it is easily accessible to the producer. Special “mesh networks” allow



The new FeedMeter system allows measurement of feed flow through a standard feed line

multiple FeedMeters on one production site to connect to one communications hub, simplifying installation and connectivity.

“FeedMeter is the first of a series of products we are planning to bring to market which will provide livestock producers rapid access to accurate farm-level data,” said Drew Ryder, Feedlogic president. “We are building a “cloud-based” information collection platform using the latest telemetry technology which will give producers and their partners access to data they could never access before.”

“Over the next 12 months, we will introduce a number of other products which will leverage the FeedMeter telemetry platform. These

CONTINUED ON PAGE 8



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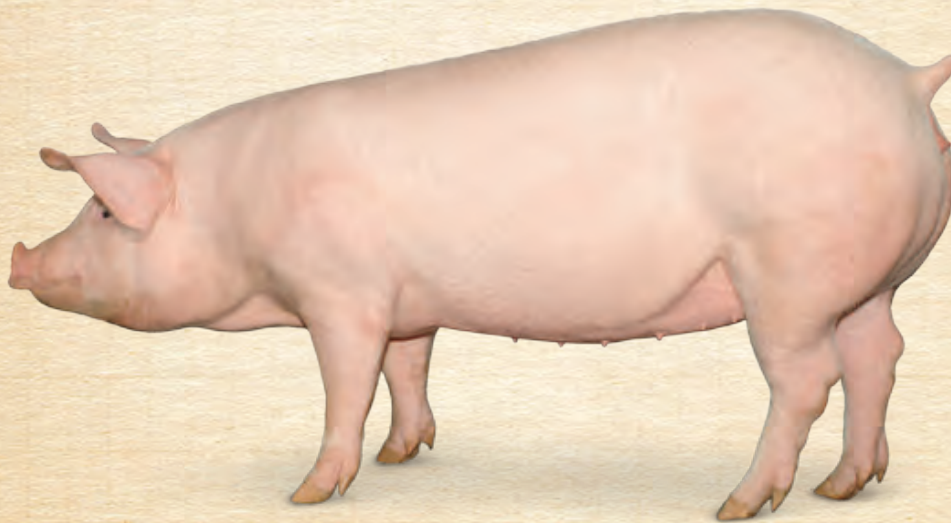
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Swineweb.com adds Swine Market Information Centre

Swineweb.com has added a new Swine Market Information Centre on its swine information portal. This allows website users to access all bar chart Swine Market Futures, Daily Swine Charts, Livestock News, and many other unique content options to assist in profitable management.

Swineweb.com will have a market snapshot for swine futures on its homepage, and the complete market centre via a separate Markets page that can be found at <http://swineweb.com/swine-markets/>. Taking advantage of these services and

accessing all other content on Swineweb.com is free.

“Adding in-depth and up to date market information to our website is the final piece of content we were lacking on Swineweb.com. Popular content to date such as our Jim Long Commentary, Other Commentaries, Technical information, and leading Swine News has increased traffic on the website by 25% over the last two years,” said Jim Eadie from Swineweb.com.

Genesis ships Canadian swine genetics to China

Oakville, Manitoba-based Genesis Swine Genetics has shipped the largest ever order of breeding stock to COFCO Corporation, China’s largest agribusiness and diversified food company. The pigs were flown out of Winnipeg James Armstrong Richardson International Airport at the end of May.

The charter flight, a Boeing 747-400 freighter operated by China Cargo Airlines contained registered Genesis purebred Yorkshire, Landrace and Duroc swine breeding stock.



Genesis breeding stock leaving Winnipeg for China

COFCO is building a US \$588 million pork production complex in Tianjin, China which will produce two million live hogs per year. COFCO employs more than 45,000 people and is the owner of 5% of Smithfield Foods, the world’s largest hog and pork producer.

The deal was recognized by Agriculture Minister Gerry Ritz at the opening of the first Canada-Russia Livestock Forum held on June 1st in Ottawa. He congratulated Genesis on the supply of 4100 breeding pigs to China, a deal worth more than \$5 million.

For further information contact Mike Van Schepdael on 204-981-4941.

Alberta Pork refunding 85 percent of producer levies

In an unprecedented move, the Alberta Pork Board of Directors voted in May to refund \$0.85 of every levy dollar collected during the 2010-2011 fiscal year. The decision is a response to several years of economic hardship on the part of producers and the continual lack of support for Alberta Pork initiatives.

“It’s all about industry sustainability,” said Alberta Pork Chairman Jim Haggins. “Our producers have incurred a staggering amount of debt

CONTINUED ON PAGE 10

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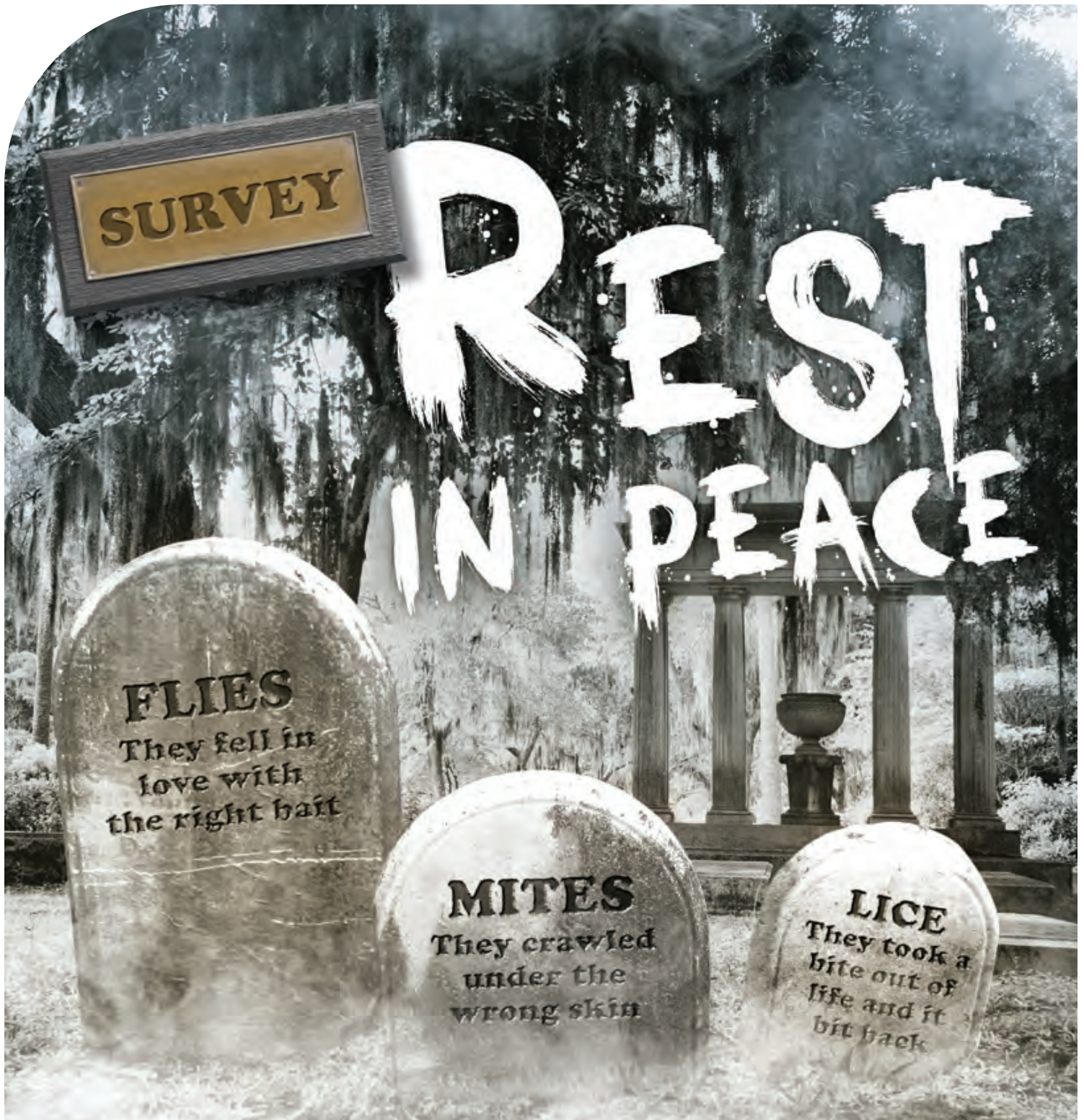
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over the last few years just to stay afloat, and it now appears that summer profits are being minimized by rising feed costs. Something has to give.”

Under current regulations, Alberta producers pay Alberta Pork a levy of \$1 for every market hog they sell, and \$0.25 for each weaner pig that is shipped out of the province. The board had hoped to leverage this money for the benefit of producers by funding a variety of programs in conjunction with industry partners and the Alberta Government, but efforts have been repeatedly rebuffed.

As a result, Alberta Pork decided to go it alone and issue the rebate. While producers

were already in a position to request their levy money back under the new refundable levy requirement imposed by the Alberta government, the board elected to move proactively to assist producers at a time of economic hardship.

“I don’t know how long the industry can continue to be in this position”

The rebate is expected to cost Alberta Pork about \$2 million for the year, leaving them \$0.15 per dollar collected and their reserves to cover operations and the development of support programs.

“I don’t know how long the industry can continue to be in this position,” said Haggins. “There is a gross inequity that exists in Alberta, where some of the most efficient pork producers in the world are also

some of the poorest paid. We cannot be asked to continuously cut our costs while receiving no benefit for the value we provide through world class safety, traceability, feeding and production programs.”

Processors, wholesalers and retailers that buy Alberta products must change from the ‘cheap food policy’ that is causing extreme damage to food production sustainability, Haggins believes.

Plan to rehabilitate wetlands will restrict Manitoba producers

By Myron Love

The government of Manitoba has announced a new plan to rehabilitate the province’s wetlands by reducing the amount of phosphates going into the water and – once again – restrictions on hog production are a major part of it. At a news conference on June 2nd, Premier Greg Selinger claimed that research shows that hog manure spreading is “the single biggest risk to Lake Winnipeg.”

“That’s a lot of hog manure,” says Karl Kynoch, a Manitoba hog producer and chairman of the Manitoba Pork Council. “This is just an election ploy,” he says. (The next provincial election is scheduled for October.) He points out that three years ago, the NDP Government introduced restrictions on hog production in the Red River Valley that shut down two-thirds of the industry. Yet somehow, the level of phosphorus flowing into Lake Winnipeg is still rising.

“A study by the Lake Winnipeg Stewardship Panel in 2006-7 reports that only 15% of

phosphate production came from agriculture and hog producers accounted for less than 2%,” Kynoch says. “Current regulations do not allow hog manure to run off the fields. Ninety-five percent of manure is injected and we are all required to have management plans.” Kynoch points out that most of the phosphates flowing into Lake Winnipeg come out of municipal sewage lagoons.


“The last set of regulations put many smaller hog producers out of business,” Kynoch says. “If producers – especially smaller producers – have to spend \$100,000 for new environmental technology, there is going to be another wave of producers getting out of the business in the months to come.”




New appointment at Genesis

Denni VanDasselaar has been appointed Territory Manager for Alberta, Saskatchewan, and Montana by Genesis Swine Genetics. He grew up in southern Alberta and took a Business Administration course at Lethbridge. “My number one goal will be to achieve the highest possible customer service and satisfaction,” says VanDasselaar. “I believe that the customer always comes first and I will do whatever it takes to make each and every person happy with Genesis’ product, my service, and ultimately, their final product.”

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Manitoba hog producers spared any flood damage

By Myron Love

For a cluster of Manitoba hog producers, the potential for spring flooding this year was nothing new. What was different, though, was the direction from whence the danger came.

Starlight Colony is used to dealing with flooding from the Red River flowing north from the North Dakota border through Winnipeg to Lake Winnipeg. And while there was widespread flooding once again this spring from the Red, the greater danger to Starlight Colony – and also Sunnyside, Milltown, James Valley, Bon Homme, Waldheim and Grand Colonies – was from an unexpectedly high flow along the Assiniboine River flowing east to Winnipeg from Saskatchewan. All seven hog-producing colonies are located in an area just southwest of Winnipeg, an area that was threatened with severe flooding danger as a result of a provincial government decision in early May to open a breach in the southern dike holding the Assiniboine waters in place at a location east of Portage La Prairie called Hoop and Holler Bend. The breach was intended to lessen the flow on the Assiniboine and save up to 850 homes downstream at the expense of about 150 homes as well as 225 kilometres of land to the southeast.

"Hog producers, such as the Hutterite colonies in the area to be flooded, had to take precautionary measures"

As it turned out, the breach – which was cut on May 14 – flooded a far smaller area than feared and no houses were lost. Nonetheless, hog producers, such as the Hutterite colonies in the area, to be flooded had to take precautionary measures.

"Our hogs were ready to be shipped to market anyway," says James Hofer, the manager of hog operations at Starlight Colony. "Since we were given enough notice of the cut in the breach, we were able to ship our hogs out five days earlier than scheduled. We also made sure that we had enough feed on hand."

Hofer reports that the seven Hutterite colonies in the area have an average inventory of about 9,000 hogs each. They are all farrow to finish operations. And because of the "Flood of the Century" – the massive Red River

flood of 1997 – the colonies were already somewhat prepared. "In 1997, we built some dikes along the La Salle River (which starts near Portage La Prairie and flows into the Red just south of Winnipeg) which flows past our community," Hofer says.

This time around, Starlight Colony – in just five days – put up an eight-foot dike running two miles north and 2.5 miles west. "We had four or five backhoes working to pile up the earthen dike along with a bulldozer to shape the dike and bobcats with front end loaders to spread gravel." Hofer is happy to report that no water came through.

Workshop focuses on efficiency and costs

The 2011 Red Deer Swine Technology Workshop program will be focusing on increasing efficiency and reducing costs, a reflection of the difficult time still being faced by the pork industry. "Cutting production costs is essential in today's tough environment," says Bernie Peet, the workshop manager. "The program includes a session on driving down feed costs by using alternative ingredients and also a panel discussion on how employees

can save cost in the barn, led by four production managers."

The production-oriented presentations examine a number of areas of management where output can be improved or costs reduced, including "The ins and outs of post-cervical AI", Mission critical: Piglet care in the first 48 hours" and "Managing nursery pigs in the first week after weaning". The final session of the day deals with how producers can cut down on carcass demerits.

The workshop will held on Wednesday, November 2nd at the Capri Hotel and Convention Centre in Red Deer. "Last year 220 people attended the workshop and the feedback on the event was extremely positive," comments Bernie Peet.

Registration costs \$75, with a special "5 for the price of 4" package available for \$300. For further information or to register, contact Bernie Peet at Pork Chain Consulting Ltd. on (403) 782-3776 or (403) 392-3104 or email bjpeet@telusplanet.net

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Mixed response to ACA implementation plans

With files from Farmscape.ca

The announcement by the Canadian Pork Council (CPC) that, with effect from January 1st, 2012, the Animal Care Assessment program will be amalgamated into the existing CQA program has received a mixed response from provincial producer organizations. While other provinces seem to be actively encouraging producers to meet the January deadline, Alberta Pork has decided to delay implementation. Alberta Pork chair Jim Haggins says when the Animal Care Assessment was originally introduced the intent was to implement it more fully but financial stresses on the pork industry have delayed that implementation and those stresses still exist.

“At the present time Alberta is continuing with the voluntary aspect of ACA Animal Care Assessment, not making it mandatory as the pre-requisite to CQA accreditation,” commented Haggins. “Secondly, a key portion of the ACA is following the code of practice for swine. That is a document that currently is quite old and it’s being changed.”

Haggins notes that the codes of practice are in the process of being revised and believes that it would be more appropriate to wait

until the requirements of the new code are published so they can be incorporated in the ACA. He stresses that Alberta Pork continues to encourage the voluntary adoption of the ACA and offers producers assistance in completing their validations.

He encourages producers to familiarize themselves with the program, knowing there will be changes coming in the future.

“Manitoba is leading Canada by a long shot when it comes to adoption of the Animal Care Assessment program”

In contrast to Alberta Pork’s approach, the Manitoba Pork Council is strongly encouraging producers to begin the validation process well before the January 2012 deadline for amalgamation. Manitoba Pork Council quality assurance and labour programs manager Miles Beaudin reports that just under 40 percent of Manitoba’s pork producers have already adopted the ACA program. “Manitoba is leading Canada by a long shot when it comes to adoption of the Animal Care Assessment program,” says Beaudin. “Manitoba producers have been early adopters to the animal care program and this shows how important this program has been to them.” He adds that for most producers only small changes in record keeping will be needed but he acknowledges large changes, such as equipment modification, will require time and capital investment.

PSC research scientist retires



Harold Gonyou, Research Scientist in ethology at the Prairie Swine Centre, retired at the end of June. Dr. Gonyou became well known to producers through his work on

gestation stall design, group housing systems for sows and large-group finishing systems with auto-sort. In addition, he has carried out research on feeder and drinker design, space allowances for pigs and pig handling.

After obtaining degrees from the universities of Guelph, Alberta and Saskatchewan, Dr. Gonyou has served as a professor at the University of Illinois and as Research Scientist in ethology at the Prairie Swine Centre. He has served as President of the International Society for Applied Ethology, editor-in-chief for the scientific journal Applied Animal Behaviour Science, and on committees for the Canadian Pork Council and National Pork Board (US). In 2009 he received the Award for Technical Innovation Enhancing Production of Safe and Affordable Food from the Canadian Society of Animal Science.

Dr. Gonyou will continue to work part time at the 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.

Slight recovery in hog numbers

The April 1 Statistics Canada census showed a slight recovery in hog numbers compared with the same date last year, recording 11.8 million hogs on Canadian farms, up 1.4%. However, the sow inventory remained virtually unchanged at 1.3 million head. Of the major hog producing provinces, most showed increased numbers, except for Quebec and Alberta where the inventories were down by 0.5 and 0.7 percent respectively.

Over the five years to April 1 the total number of hogs in Canada has declined by 21.4% while sow and gilt numbers have gone down by 17.3%. In the east, the contrast between Quebec and Ontario is huge. While pig numbers in Quebec have reduced by around 9%, Ontario has lost more than one million hogs in the last five years, with total numbers down by 28% and sow numbers down by 18%. With the current high feed prices and corn at around \$7.50/bushel, there is talk of more herd liquidation in Ontario.

In the west, Manitoba has fared the best in terms of percentage reduction in hog numbers, despite the effects of COOL. Total hog numbers have fallen by 10.4% and sow numbers by 14.2% over the last 5 years. Saskatchewan has seen total hog numbers go



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down by 43.8% and sow numbers by 30.8% over the same period, while in Alberta, the numbers are -28.7% and -23.4% respectively. British Columbia continues its precipitous decline as a pig producer, with total hogs down by 42.6% since April 2006 and sows and gilts down by 56.3%. BC now only has 8,000 sows left in the province.

Not surprisingly, the number of farms with hogs reflects the decline in hog numbers, with 40% fewer producers in Canada than five years ago. Quebec saw the smallest decline in the east, at 26%, whereas Ontario had 42.3% less producers.

In the west, the overall reduction in farms with pigs was 44.5%, with Manitoba down 38.3%, Saskatchewan down 60.8% and Alberta down 51.2%. For some reason the census still records 650 farms with pigs in BC, only 21% less than 5 years ago. According to their data there are more hog farms in BC than in Saskatchewan. Apart from Manitoba, which appears to be correct, with 740 farms, the other provinces show farm numbers far higher than the actual numbers.

So, where now for Canadian producers?

After five years of decline, the Canadian pork industry has, at last, shown some signs of stability over the previous 12 months. However, although hog prices are relatively high in relation to the five-year average, high feed prices are cutting margins to almost nothing. The Canadian dollar continues to be valued at more than the US dollar, keeping the hog price far lower than it might have been. For example, the current hog price of about \$1.60 would be \$1.83 if the loonie was worth US\$0.90. That would make a huge difference to margins, but unfortunately the USD is likely to remain weak for a long time, while the Canadian dollar is powered by high oil and mineral prices. The only saviour will be lower feed prices on the back of a good North American harvest. Otherwise as the hog price falls seasonally after the summer, producers will be firmly in the red once again. As our feature article on production costs in Europe, Brazil and Canada shows, Canadian producers are not only efficient but also have relatively low costs of production. Unfortunately, they also receive the lowest price for their product in the world. Until they are rescued by a weaker Canadian dollar, which will likely be some years away, they must continue to improve efficiency and reduce costs in order to survive.

One wild card will be the impact of the recent ruling by the World Trade Organization on the US COOL legislation, which, it says, violates the provisions of WTO's agreement on Technical Barriers to Trade. The preliminary ruling was given on May 20th, with a final ruling likely in September. While the US will no doubt appeal the ruling, it will eventually have to dissolve mandatory COOL or face trade retaliations from Canada and Mexico. In the long term, assuming COOL is dismantled, there could be a big increase in demand for Canadian isowean and feeder pigs. The current annualized rate of imports is about 5.6 million compared with a peak of 10 million in 2007. The removal of even another 2

CONTINUED ON PAGE 16

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Industry Viewpoint **Continued**

million pigs from the Canadian market would see processors competing more strongly for market hogs, which would increase the price paid. COOL saved processors from a shortage of pigs as the national herd declined during 2007-10, so was a blessing in disguise for the processing industry. A reversal of the US legislation could be exactly the opposite.

European sow herd may shrink by 30%

The total sow herd in Europe may shrink by as much as 30% when stricter animal welfare rules come into place in 2013 in the European Union, says an analyst at the Dutch bank ABN Amro.

Wilbert Hilkens, the bank's sector manager for Animal Industries, says: "Even if it would only be 15%, this could be a significant reduction. This will mean lower meat production, with demand that stays at the same level and will increase on the other continents."

According to the bank, for about 20% of its customers in the pig industry, investments for animal welfare may not be feasible. Those pig farms that remain in business will grow and thus the number of animals will eventually come back to the current level, Hilkens predicts.

But Wyno Zwanenburg, chairman, Dutch Union of Pig Producers (NVV), believes the dropout of pig producers may even be larger. "We think that in the Netherlands there are about one third of the pig farms that have already taken care of all investments, there is one third that can do it and there is one third that is going to have a difficult time."

The reduction in pig numbers will result in significantly higher prices for producers and consumers, says ABN Amro.

Brits target retailers in quest for higher prices

The British producer organization, the National Pig Association (NPA) has been waging an increasingly aggressive and high

profile campaign against the country's retailers in the quest for higher prices. The association calculated that in May, producers were losing at least £15 (\$24) per pig.

NPA chairman Stewart Houston says that the lack of support from some supermarkets for the pig industry may cause imminent shortages of local pork. "We warned them this would happen, but they refused to listen. They are fixated on their own short-term margins," he said. In Britain Tesco, Asda and Sainsbury's are the three large supermarkets that have failed to recognize the looming supply crisis, says NPA. "They have told producers in numerous meetings that they will help drive up the price through special promotions and by diverting more of their spend from imported pork to higher-welfare home-produced pork," NPA told Pig World magazine.

"But they have been telling processors a different story – that they intend to maintain their margins at all cost. Despite their claims to support British pork, they have failed to put an extra penny into the supply chain."

One of the retailers, Sainbury's, responded by making a discretionary payment of an additional 5p (8cents) per kilo until August 1 or until the pig prices stabilizes at £1.50 (\$2.40) per kilo.

Although there has been a seasonal increase in price from about £1.37 (\$2.19) to £1.48 (\$2.37), producers are still losing money and the price premium over other European countries has shriveled. NPA has created a high level of awareness of the producers' plight through its "Pigs are Still Worth It" campaign, including the "Banner Blitz" described by Stuart Lumb in the spring issue of WHJ. The banner slogans are about to become much more aggressive, explaining how greedy supermarkets are threatening the future of family farms.

The British Pig Industry Support Group (BPISG), a rather more militant body than the NPA, is organizing a demonstration at the headquarters of Asda, Wal-Mart's UK retailer. During the crisis of 1998-9, BPISG blockaded retailer distribution depots to make their case and frustrated producers may well feel that this type of action is justified again. ■



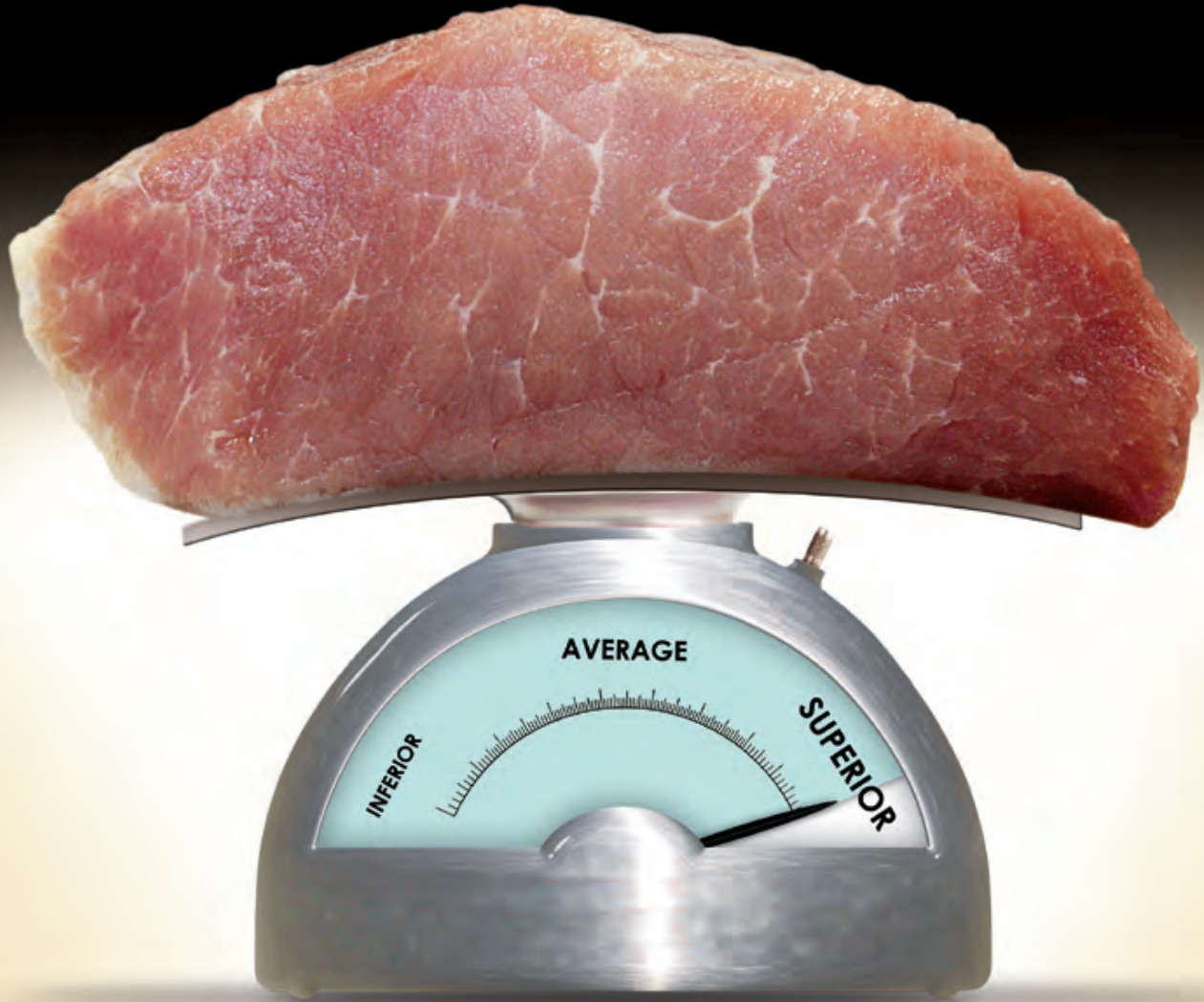
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London Swine Conference

The London Swine Conference is aimed at providing a platform to accelerate the implementation of new technologies in commercial pork production in Ontario and facilitating the exchange of ideas within the swine industry. The event is coordinated by the Ontario Ministry of Agriculture, Food and Rural Affairs, Ontario Pork, Ontario Pork Industry Council and University of Guelph. It has established a reputation as an excellent communication medium within the industry and features speakers from Europe as well as North America.

Next year's conference will be held on March 28th and 29th, 2012 and further details can be found at www.londonswineconference.ca

Value-added pork production: What strategies are working today?

Important attributes of niche pork in the past have included taste, animal welfare, perceptions of impacts on human health, environmental stewardship, the "story" of the brand, traceability, and third party certification, explains Gary Huber of the Pork Niche Market Working Group, based in Ames, Iowa. He believes that some possible areas for continued differentiation include heritage breeds, pen-raised with bedding, unique diets, locally-raised, certified

organic and value-based supply chains. Huber says that while opportunities will continue, success will require attention to superior management and continuous adaptations based on changing conditions. He examines the options for producing and marketing niche products and highlights two successful examples.


Introduction

The Pork Niche Market Working Group (PNMWG) started in 2002 and is made up of companies, organizations, and agencies based in Iowa and surrounding states. We work to try to help address the challenges involved in producing and marketing what we call niche pork. In the process, we have learned much about this segment of the industry.

The history of niche pork in the upper Midwest


The development of niche pork products in the Upper Midwest region of the USA began over ten years ago due to two factors; the extremely low prices for hogs in late 1998 and an increase in demand for products with various unique attributes. This led some producers to begin to develop systems to market their pork products directly to consumers, foodservice and grocery store buyers. It also led to alternative production systems that focused on various attributes that were becoming important.

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Developing systems to produce and market niche pork products required that these new businesses learn a great many skills. These included processing, carcass utilization, and labelling issues; finding customers, understanding their needs, and employing effective promotional strategies and managing inventories, developing invoicing systems, and getting paid. In addition, producers had to deal with the challenges of cost-effectively producing a steady supply of hogs year-round using methods that provided the attributes desired by customers.

The leaders of these new businesses also needed products that were sufficiently different in ways that mattered to buyers. They focused on seven main kinds of attributes, sometimes combining them in various configurations. These were:

1. taste, which led to the rise in brands that used Berkshire genetics;
2. animal welfare issues, which led to brands that required bedded pens, outdoor access, longer times to weaning, and restrictions on tail docking;
3. perceptions of impacts on human health, which led to prohibitions on using antibiotics or animal by-products in feeds;
4. “credence” attributes, or the “story” behind the brand (who you are and what you care about);

5. environmental issues, or the use of production systems with environmental benefits;
6. traceability, or being able to follow product back through the supply chain to its source; and
7. third-party certification, or being able to prove your claims, such as certified organic.

“Raising and marketing organic pork is very challenging”

Over the last decade there have been casualties. One example is a brand called Wholesome Harvest, which was a certified organic company. It isn’t clear why they didn’t succeed, however raising and marketing organic pork is very challenging due to the severe requirements that come with being certified organic and confusion in the marketplace about what organic means.

Two success examples

Niman Ranch

This company has several features that have helped them succeed. One is brand recognition. They have done a wonderful job of creating a perception of their brand that includes very

CONTINUED ON PAGE 20



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high quality products, plus the values of environmental stewardship, happy and healthy animals, and small family farmers. In other words, a key to this brand's success is the "story" of the brand.

The importance of the focus on small family farmers is worth a bit more explanation. Niman's system involves working with a network of about 500 small farmers spread across a large portion of the United States. They have invested quite heavily in staffing to coordinate the supply of hogs from this network, but it is a key part of their story and a main point of differentiation.

For example, they do an annual farmer appreciation dinner every September where these farmers are guests of honour for a meal prepared by chefs from restaurants that serve their products. They give awards to farmers with the best meat quality. They also give out scholarships using funds donated by customers to children of the farmers to study animal science

and help bring in the next generation of Niman Ranch farmers. It is part of a carefully crafted strategy that builds the story of the brand.

Another helpful Niman feature is that the owners of the brand also own their packing plant, which is Sioux-Preme Pack in Sioux Center, Iowa. Niman's situation is unique because the plant does custom processing for a large number of Upper Midwest niche pork brands and this business is very profitable. It may also give them a unique view into their competitors' businesses.

Eden Farms

This successful company markets pork from Berkshire hogs. One key to their success is a laser-tight focus on meat quality, which includes visually inspecting every carcass as it moves off the processing floor into cold storage at the plant they use in Des Moines. This attention to quality is a main point of differentiation, and they highlight this feature heavily in their promotional efforts.

"It is one thing to eliminate gestation crates, but quite another to eliminate farrowing crates"

A second key to Eden's success is how they have legally structured their business. They have a Limited Liability Company where the brand is owned by the farmers who produce the hogs. They use a set pay price for the live animals, they have the hogs custom processed, and they sell meat primarily to high end restaurants in several areas across the USA. They then pay for expenses with this income and distribute the profits back to its owners based on who supplied the hogs. This structure has vested the producers in the business in a way that they work very hard to make sure the company succeeds.



The hairy Mangalitsa pig is prized for its outstanding eating quality (Photo credit: i-stock photo)

What is on the horizon for niche pork?

An important concept is how many niche products become commodities once a niche fills up. Antibiotic-free pork is one such product. Major companies in the US have added antibiotic-free pork products. Which attributes have value in the marketplace, but are unlikely to be easily replicated by later adopters? Here's my short list:

Heritage Breeds: Examples include Berkshire, Hereford, Large Black, Mangalitsa, and Red Wattle. These are breeds that are prized by high end retailers and restaurants that are looking for ways to differentiate themselves. But productivity issues due to the lack of hybrid vigour resulting in poorer growth rates and greater feed consumption limit their attractiveness to many potential growers. Limited access to the genetics is another constraint to entry. For example, the American Berkshire Association requires the registration of herds to assure that meat sold as Berkshire only comes from purebred animals.

Pen-farrowed, pen-raised using bedding: It is one thing to eliminate gestation crates, but quite another to eliminate farrowing crates. Farrowing crates are used for a reason, which is to reduce crushing losses. Some large companies have attempted to make this system work with large farms in warmer climates that use pasture-based production systems, but these attempts have failed. Maybe this can change,

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but it will be a huge challenge to ramp up this kind of production system to achieve significant scale.

Pork from hogs fed special diets:

Two PNMWG companies sell specialty pork from hogs fed a diet of at least 60% acorns for three months before slaughter. The idea comes from the legendary acorn-finished ham produced from Iberian pigs raised in oak forests

in southern Spain. This product will not become mainstream anytime soon. Whether a product like flax-fed pork can be a good niche product depends on: 1) whether the perceived value is enough to pay for the added costs; and 2) whether it is sufficiently difficult to produce to limit its adoption by large companies. It is unclear whether flax-fed pork has these features. With acorn

pork, the perceived value is sufficient and it is very hard to produce.

Local: There is no accepted definition of the term local. Someone with Whole Foods defined it as the distance a truck can travel in a day. However, buying local is big and it is likely to continue so. One challenge is securing significant sales volumes, especially in areas with lower population densities. The other is getting all the logistics and infrastructure needs satisfied in a cost effective manner.

Certified organic: Organic pork will continue to be a niche product because of the high costs of production relative to “natural” pork products.

Value-based supply chains: This concept involves all partners in the supply chain agreeing to base their relationships on certain values, such as transparency, fair compensation for contributions of all partners, and selling products with value-based attributes that consumers desire (i.e. environmental stewardship). It has potential to build on some documented consumer trends, such as authenticity, or the desire of consumers to develop connections based on deeper, shared values.

Conclusions

All of the niche pork brands I work with share one challenge – finding adequate supplies of hogs with the proper attributes. Much more attention needs to be placed on improving the productivity of these alternative systems, especially given the price of feedstuffs. At the other end of the supply chain, another challenge is the power wielded by customers like Whole Foods and how they have been increasing their expectations of suppliers. Despite these and other challenges, there are opportunities in this segment of the industry. Niche pork businesses with good leaders, that are well managed and focus on executing all aspects of operations properly, and that produce products that are sufficiently different in ways that matter to customers, are likely to succeed. ■

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Quality Meat Packers' brand stories

Success in marketing any product, including pork, relies on the ability of a product to uniquely and competitively fill an unmet consumer need in the market and to create a relationship or brand experience with target consumers, believes Jim Gracie, Vice President Marketing and Business Development with Quality Meat Packers in Toronto. This family-run meat and pork processor, established in 1931, processes 30,000 hogs per week, making it the third largest pork processor in Canada. Jim Gracie highlights four brands of pork that are supplied from Quality Meat Packers that have been successful in the pork category.

Brand story 1: Walking Tree Pork

'Walking Tree' is the brand name for the fresh chilled pork sold in the Japanese market by Quality Meat Packers. Selling fresh pork in the Japanese market requires a meaningful consumer benefit with high appeal in that market. The Japanese consumer values purity and the assurance of high standards for food safety. Meeting these needs is captured in the 'Walking Tree' brand through the use of images of Canada (pristine and pure) and the producer families (trusting and caring) that grow the hogs.

Support for the brand promise of purity and food safety is done through the sourcing of livestock from six farms in Ontario that make up our "Quality Producer Alliance". These farms follow strict protocols for husbandry, cleanliness, and batch segregation processes. They are regularly audited by a third party and visited by Japanese customers. Further support for the food safety benefit is that the Quality Meat Packers plant is certified under the SQF standards (Safe Quality Foods). This is a standard that is recognized in the Global Food Safety Initiative (GFSI) as the highest level of food safety. Quality Meat Packers was the first meat plant in Canada to obtain SQF certification.

Brand stories 2 and 3: Loblaw's 'Free From' Pork and 'Nature's Own' Pork

There is a segment of consumers in the Canadian market that are looking for purity in the food they eat. They seek to avoid the feeding and medication practices that are often associated with modern farming. A major Canadian retailer, Loblaw Stores is targeting this segment of consumers with their 'Free From' brand of products. Quality Meat Packers is the supplier of pork for the "Free From" program in Ontario and Eastern Canada.

The pork program is a true value chain program. Nutrition and diet requirements were developed by Grand Valley Fortifiers to raise hogs without antibiotics, that are vegetable grain fed and are never fed animal by-products. Started in 2007, now over 35 farms in Ontario raise hogs specifically for the 'Free From' program. Quality Meat Packers provides the segregated processing of the hogs and compliance to regulatory labelling

standards as defined by the Canadian Food Inspection Agency. Loblaw Stores merchandises the counter-ready packages of fresh pork to be purchased by consumers.

Market potential for so-called niche pork products like pork raised without antibiotics is estimated at 15-20% share with a price premium of 40% over conventional pork.

The 'Nature's Own' brand was developed by Quality Meat Packers to market the processed meats that use raw material from this program. This includes a 'Nature's Own' smoked sausage, black forest ham, and potential for a bacon product.

Brand story 4: Legacy fresh pork

The generation of consumers that are entering into their 20's may be the first generation that has never seen Mom or Dad cook a meal in the kitchen. Combined with growing time pressures and the need for convenience, this is the target position for the 'Legacy' brand. Several fresh convenience products have been launched by Quality Meat Packers in the past two years.

These are fresh pork products that:

- Are ready to cook, and will be moist and tender even when grilled.
- They are pre-spiced with comfortably upscale spice blends that complement the meat, not hide the meat.
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'Legacy' products are the fastest growing products in the fresh pork category for Quality Meat Packers and target the younger consumer that traditional pork cuts are missing. ■

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Energy management in swine barns

A reduction in energy use of up to 75% can be achieved in swine operations with minor operational, maintenance and equipment changes, according to Robert Chambers, an engineer with the Ontario Ministry of Agriculture, Food and Rural Affairs. Proper management, maintenance and equipment selection of the ventilation system is crucial to reducing the energy consumption, he says. Having an energy audit done can assist producers in the steps to take and identify key areas of concern, Roberts notes. Further reductions can be achieved with solar walls, heat exchangers and windbreaks.

Introduction

All forms of purchased energy used in swine facilities whether it be electrical, propane, natural gas, heating fuels, etc. have experienced both volatility and a trend towards higher costs in the past few years. The vast majority of predictions see this pattern continuing for the foreseeable future. Swine producers facing increasing feed costs have done an excellent job in allocating the proper feed type to the proper needs of each group of animals. The same method should be done in allocating energy requirements to meet the needs of each group of animals. Producers should then investigate alternative methods of energy savings, such as heat exchangers, or alternative heating systems such as solar walls or hot water biofuel systems.

Energy use in swine facilities

Energy use in swine facilities is divided between electrical loads, ventilation fan motors, lighting, heating such as creep heaters, and feed motors, pumps and other miscellaneous loads such as heater motors, controllers etc.

The largest user in fan ventilated buildings is ventilation fan motors and it is one that producers should concentrate on. Proper design, sizing, and make of fan along with proper set points, maintenance and cleaning can drastically affect the overall performance and efficiency of the system. Usually 60 to 70% of the heating costs are attributed to the ventilation system and a poorly run ventilation system can also have


negative effects on animal performance and building and equipment longevity due to high humidity issues. By lowering the set point to meet the needs of the animal, significant savings can be found. In a recent study done at the IRDA in Quebec, by lowering the usual temperature set points in grow-finish swine from 22.2°C start to 20.0°C finish to a 21.1°C start and a 14.4°C finish, savings of 56 to 60% in heating energy requirements were realized. This was done without compromising animal performance or meat quality. It was noted though that the set points should be raised during warm weather as all the savings in heating would be lost in increased ventilation requirements.

"Replacing incandescent bulbs with compact fluorescent can reduce electrical use by 75%"

Lighting is another area where savings can be easily made. Replacing incandescent bulbs with compact fluorescent can reduce electrical use by 75%. Replacing the compact fluorescent with premium T8 fixtures can reduce the electrical use by approximately 40%. This is 16% of the electricity required to produce the same light as a 100 W incandescent bulb. T8 fixtures are also available in a vapour-tight format to protect the lamps from barn humidity and washing down. The life of the lamps are rated at 30,000 hours, 3 times that of compact fluorescents.

Another large user of electricity in farrowing units is 250 W infrared creep lamps. By replacing these with electric heat

CONTINUED ON PAGE 26



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Infrared heat lamps are large consumers of energy in the farrowing barn

mats with controllers, electricity can be reduced by 66%. Hot water pads can also be used if a hot water system is in place or is installed. Further electrical saving can be achieved if high efficiency electrical motors are used to replace worn out motors in such things as the feed system, water pumps, manure transfer system, etc. Savings of 1.5 to 5% can be expected - the more the motor is used the greater the savings. By using water saving bowls, wet-dry feeders and troughs instead of nipple drinkers, savings of 20% in water use are possible, along with the associated water pumping and manure removal costs.

Building envelope

Even though heat losses through the building envelope are minor compared to the ventilation system, they should not be ignored. Seal up all air leaks. Not only do they

contribute to energy losses but can cause animal discomfort and in certain instances contribute to deterioration of the structure. Insulation levels should be R 20 in the walls and R 30 to 40 in the ceiling. If the attic space is being used as a plenum, consider insulating the underside of the roof to R5 to reduce condensation in winter and solar heat gain in the summer.

Adding it all up

While no one change may cause a major reduction in energy, added up they can make a huge difference. A large Manitoba based swine loop was able to achieve savings of \$200,000 per year in 15 finisher farms.

Having an energy audit done can also identify opportunities for reductions. Operations can vary in energy consumption by a factor of 4, producing the same volume of pork. Auditors can develop a “shopping list” of suggested tasks and equipment changes that an operator can then focus on to reduce their overall energy costs.

Other items

Tree windbreaks planted strategically around the facilities can reduce heating costs by up to 25%. An added benefit is that snow removal costs can be lowered as well and odours from the facility are lowered. Many of the Conservation Authorities offer free planting layouts and trees are supplied free or at a discount. The biggest issue is that it can take up to 10 years before results are noticed.

Solar walls can be used to supplement the heating system. In a study of a nursery barn in Quebec, heating costs were reduced between 23 to 31% over the winter months.

Heat exchangers can also be used to pre-warm the incoming air with the exhaust air. Exchangers must be designed so as not to be adversely affected by the condensation and resulting dust/slime build-up on the exhaust side of the exchangers. In below freezing temperatures, frost build-up on the exhaust side can also be an issue. Some designs require regular washing in order to maintain their efficiency. With proper design and maintenance, heating energy savings of 60 to 70% can be attained.

Conclusions

There are significant energy and dollar savings to be had in swine barns. By properly managing the ventilation system and replacing energy inefficient lights and motors with more efficient equipment, producers can lower their overall energy costs by up to 75%. By adding items such as wind breaks, solar walls and heat exchangers further reductions can be achieved. ■

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The nutrition and economics of feeding entire males

With rising feed costs and increasing animal welfare pressure on the practice of castration, there has become more interest in raising entire male pigs for pork production, notes Neil Ferguson of Nutreco Canada Agresearch. The benefits of raising entire male pigs as opposed to physically castrated males (barrows) include better feed conversion efficiency, lower back fat, higher percentage lean and trimmed lean cuts, lower feed costs and potentially higher profit margins, he says. However, before these benefits can be realized the main disadvantage of finishing entire males, namely boar taint, needs to be addressed, Ferguson points out. New anti-GnRH vaccines offer one means of eliminating boar taint and will soon be licensed in North America. Nutrient specifications will have to change to meet the higher nutrient demands of rearing entire males, as well as the reduced levels required after the 2nd immunization, Ferguson says. He looks at the nutritional and economic implications of a move towards rearing entire males.

Introduction

Entire male pigs that are produced for human consumption are either slaughtered prior to sexual maturity (85-100kg live weight) or physically castrated soon after birth to reduce the risk of boar taint and to reduce aggressive and sexual behaviours. Boar taint is primarily a result of the accumulation of the compounds skatole, androstenone and indole in fat tissue and is responsible for the unpleasant smell when cooking pork products. Recently there has been considerable pressure on the practice of physical castration due to animal welfare reasons (stress, infection), with the likelihood that in many parts of Europe the practice will be banned by 2015. Castration without anesthesia is already banned in Denmark, Norway and Switzerland. With this in mind, as well as the need to improve the efficiency of pork production due to high feed costs, the raising of entire males for human consumption is back in the spotlight. The advantages of finishing entire males are many and offer potentially better economic returns. Therefore, if the disadvantages associated with boar taint, increased aggression and lower dressing percentage in finishing entire males can be addressed, then producers could take advantage of the better feed efficiency and carcass characteristics of entire males compared with physical castrated male pigs.

CONTINUED ON PAGE 28

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Performance and carcass characteristics of entire males

There are numerous studies to show that entire male pigs have similar growth rates but eat less (5-10%) and are more efficient (10-15%) than barrows. They also have a lower dressing percentage (4%) due to heavier reproductive organs and surrounding tissues, have lower backfat (3-9mm) and higher lean yield (3-5%) than barrows. The reason for these differences can be partially explained by the significantly higher rates of protein and lower rates of fat tissue deposition in entire male pigs.

Generally there are few differences in the meat quality of entire males relative to barrows. Entire males have a larger loin eye area and a higher lean cut yield (trimmed ham+loin+shoulder) but they also have a higher degree of unsaturated fatty acids leading to softer fat.

Nutrient requirements

There are very few recent published data defining the differences in amino acids (lysine) requirements between entire males and barrows but it is expected that entire males with higher rates of protein deposition and lower feed intakes than barrows will require higher

"Entire males will have feed costs that are \$6-\$7/pig or \$0.07/kg lower than barrows"

amino acid:energy specifications in their diets. Using what data were available in the literature and the proprietary growth simulation model Watson 2.0[®], it would appear that entire males require between 5-12% (25-50kg), 15-23% (55-95kg) and 23-30% (95-120kg) higher levels of lysine than barrows. Bone mineral deposition, and therefore Ca and P requirements, will

follow similar proportional increases as for amino acids.

Economics

Valid economic comparisons between entire males and barrows at current market weights (120kg) are inappropriate because of the rejection of entire male pigs at slaughter facilities and the subsequent devaluing of their carcasses. It is expected that over the whole grower-finishing period (25-120kg) and using current (January 2011) ingredient prices, entire males will have feed costs that are \$6-\$7/pig or \$0.07/kg lower than barrows.

Controlling boar taint

Boar taint is affected by genetic factors, including breed differences, and therefore it is possible to select against skatole and/or androstenone. However, to date progress has been slow therefore the opportunity to use genetics to control boar taint is, at best, a long-term solution. There has been some success with using nutrition to control skatole absorption rate and levels from the intestinal tract, but such dietary interventions are costly.

The most promising technology to control boar taint is the immunization against gonadotrophin releasing hormone (GnRH) or immunological castration. Once immunized, the entire male exhibits similar characteristics to a castrate including a lack of boar taint and aggressive behaviour. Currently there is no vaccine available in North America but Pfizer are awaiting approval of their product (Improvest[®]), which has been used in Australia and Brazil for over 5 years. As this technology is currently available in most parts of the world and offers the most potential, it is worth further discussion.



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Table 1: Average performance of immunized males relative to barrows

Source	ADG	ADFI	FG	Back fat
Post 2nd immunization period (4-6 Weeks prior to Slaughter)				
Literature average*	1.12(±0.11)	1.04(±0.05)	0.94(±0.08)	
Nutreco Canada Agresearch (2009)	1.25	1.07	0.86	
Watson (Avg 3 genotypes)	1.10	1.01	0.92	
Average % difference	+11-15%	+4%	- 7-9%	
Whole Grow-Finish period (25-120kg)				
Literature average*	0.99(±0.05)	0.99(±0.04)	0.95(±0.02)	0.90(±0.08)
Pfizer study summary (Pfizer 2010)	1.06	-	0.91	0.87
Nutreco Canada Agresearch (2009)	1.05	0.95	0.91	0.91
Watson (Avg 3 genotypes)	1.03	0.94	0.92	0.91
Average % difference	+3%	-4%	-8%	-10%

*Literature average from 6 recent published studies (2002-2009)

Immunization against GnRH

Performance and carcass characteristics

As the immunization process requires two doses with the latter given 4-6 weeks prior to slaughter, immunized males will grow as entire males for most of the grower-finisher period and only exhibit the reduced (relative to entire males) feed conversion efficiency after the 2nd dose. During the 4-6 week period prior to slaughter, immunized males eat more, grow faster and are more efficient than barrows. Similarly, over the whole finishing period (25-120kg), immunized males will exhibit higher growth rates, lower feed intakes and feed conversion efficiency, and lower back fat than barrows (Table 1).

Immunization has minimal effect on pork quality but will reduce the hot carcass dressing percentage by 1-3% points relative to barrows. However, percent lean yield will increase by 1-2% due to lower fat and higher muscle depth.

CONTINUED ON PAGE 30



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Nutrient requirements and optimum nutrition strategies

There is minimal published data on the nutrient requirements of immunized males. Generally, the energy content will remain the same although there may be some merit in decreasing energy content of the diet after the second immunization dose because of the increased feed intake and predisposition to deposit large amounts of fat. An alternative to regulating energy intake may be to restrict feed intakes of the immunized males in the last 4-6 weeks before slaughter. Amino acid requirements for minimum feed:gain of the immunized male (95-120kg) will vary depending on the accessibility to feed, but appears to be between -2% and 0% of barrow requirements over the same weight period. Although there is no published

evidence to suggest otherwise, mineral and vitamin levels will follow similar responses as amino acids.

"Immunized males will have a lower carcass weight than barrows for a given slaughter weight"

The most appropriate nutritional strategy to optimize profitability for a particular producer will depend on their production system (genetics, environment, health status, etc.). One of the questions facing a producer who can only feed a single feed at the various stages of the grow-finish period is what levels of amino acids should be fed to maximize margin over feed costs when using immunized males. Should one feed amino acid levels that will meet the entire male requirements, but then over supply the gilts, or should

one feed to satisfy gilt requirements and underfeed the entire males during the grower phase but over feed after the 2nd immunization? Using Watson 2.0® it would appear that the optimum amino acid levels to feed both gilts and males (using 7 Jan 2011 ingredient and hog prices) to maximize MOFC can be ranked according to the following gender specifications: 1) Combined ; 2) Gilt; 3) Immunized male; 4) Entire male; and 5) Barrow. This order could change depending on ingredient and hog prices.

Economics of immunized males

Immunized males will have a lower carcass weight than barrows for a given slaughter weight (e.g. 99% at 120kg), which is exacerbated if slaughtering at a fixed age (e.g. 97.5% at an average of 16 weeks). However, the 2.5% improvement in lean yield and reduced feed costs can potentially increase MOFC by \$4-\$5/immunized pig (including immunization costs) or reduce feed costs/kg gain by \$0.08-\$0.09/kg of gain (Watson 2.0, assuming 7 Jan 2011 ingredient and hog prices, on Signature 2010 grid). This is similar to the outcome predicted by Deen et al. (University of Minnesota) of an additional \$5.48 per immunized male versus a barrow.

Conclusions

There are significant performance and economic advantages of finishing entire males but, in order for this to occur, it requires control of boar taint, packer acceptance and alternative nutritional strategies. Immunization against boar taint offers the most promising option of controlling boar taint as it allows the producer to maximize the benefits of rearing entire males as well as improve profitability. To maximize the financial returns alternative nutrition strategies will need to be defined and implemented. ■

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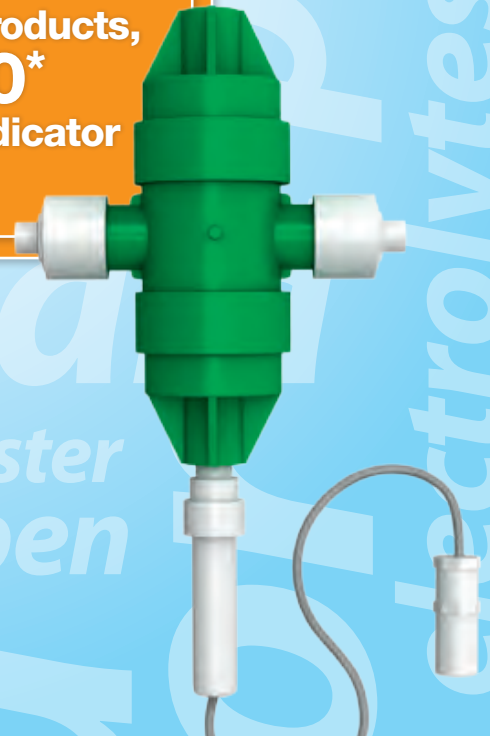
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Pressure on conventional agriculture

Conventional swine production faces challenges from many sectors, and animal welfare is particularly high on the public agenda, says Dr. Suzanne Millman, Professor of Animal Welfare at Iowa State University. Video images of poor husbandry practices and challenges to currently acceptable standards require swine producers to be prepared to ensure their practices are consistent with current standards, she believes. There is no Gold Standard for swine husbandry, Millman notes, since animal welfare decisions about the best life for pigs is affected by value judgments. In this extract from her paper, she describes the approach that producers should take in the light of the current environment regarding animal welfare.

Recognize the critical control points in your operation

One only has to keep an eye on the media to recognize the issues at the forefront of the animal welfare dialogue. There are a handful of concepts that arise time and again regardless of the species, and they hit on a few key ethical points.

1. Animal housing that restricts movement is easily communicated in photographic and video images. In the swine industry, this means that we can expect to respond to questions about sow stalls for gestation and farrowing crates that provide little space for postural changes. In legislation we consistently see public support for housing that allows an individual animal to stand, lie down, stretch its limbs, turn around and groom itself.
2. Animal housing that fails to provide outlets for natural behaviour. This would include housing on slatted floors that preclude use of bedding or substrates for rooting and oral exploratory behaviours. Provision of environmental enrichment, such as balls or chains that the pigs can manipulate, are points worth communicating since although some consumers will prefer natural materials, provision of ropes and chains acknowledges the pigs as sentient beings rather than objects.



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3. Painful procedures in the absence of analgesia or anesthesia, such as castration and tail docking, are difficult to defend. Again, these images are easily communicated through photographic and video media to provoke responses. Further, awareness that these procedures are typically performed on pet animals with anesthesia and follow-up analgesia results in expectations about appropriate veterinary care. Concerns about animal pain are higher in segments of the population that have university education, and given the increasing knowledge about the biology and neuroscience of pain these expectations will only increase over time.

4. Abusive animal handling and abusive language when handling animals is featured in many video exposés and raises concern not only for the animals but for implications for human safety. Domestic violence and other forms of human aggression have been linked to animal abuse and animal cruelty. These actions are illegal and should be considered as such. Rough handling, which does not cross the line into abuse, is also of concern.

"You should always behave as if your euthanasia procedure is going to be shown on the evening news"

5. Euthanasia is always going to be disturbing. It is safe to say that you should always behave as if your euthanasia procedure is going to be shown on the evening news. Do not improvise on euthanasia techniques that have not been endorsed by the American Association of Swine Veterinarians or other recognized professional bodies. We can look to the wording of the Ohio livestock legislative actions during the past year to see consequences of poorly thought through euthanasia. Actions

that were captured include video of hanging a sow by the neck. The decision by a few individuals to try to defend this behaviour resulted in public mistrust and legal language specifically regulating acceptable on-farm euthanasia procedures.

6. Considering individual animals as products rather than sentient beings capable of feeling pain and pleasure provokes public distrust. Careless tossing of animals, live or dead,

without regard to them as a form of life is objectionable to many people. Euthanasia of large numbers of animals is disturbing, especially when these result from economic reasons rather than because of disease or natural disasters. The psychosocial effects of culling large numbers of animals during the UK Foot and Mouth outbreak and during the BC avian influenza outbreak resulted in profound impacts on the

CONTINUED ON PAGE 34

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communities affected, beyond the farmers, veterinarians and responders of the community directly. Moral conflict can arise in these situations due to animal welfare, wasted resources and perceived inhumanity associated with the enormity of loss of animal life.

Document prescribed standards of animal care

To respond to public criticism about conventional practices, there are several resources that swine producers can draw from. First, ensure that you are familiar with the animal cruelty and neglect provisions in the Canadian Criminal Code, as well as provincial and local laws. Animal cruelty laws typically exempt customary agricultural animal husbandry practices. This is a subjective judgment decision by animal control officers, investigating veterinary experts and by the legal professionals working on these cases. You should be aware of the wording of the law, and have evidence to support that your husbandry practices fall within generally accepted practices.

The Canadian Recommended Codes of Practice, US National Pork Board PQA+ guidelines and American Association of

Swine Veterinarians *On-Farm Euthanasia of Swine* guidelines are all excellent resources as supporting evidence of current industry standards. You should have copies of these documents in your office and available for your staff and for discussions with members of the community. It is also important to have documentation of the compliance with these standards. Animal welfare assessment and auditing tools are available for third party verification, and for use internally to identify strengths and weaknesses within your facility.

Track the date and time of training provided to staff, especially for practices known to be controversial such as piglet processing and euthanasia. There are also opportunities for external training and certification of completion in some regions. For example, at Iowa State University we have launched the Iowa Swine Welfare School with one-day training modules in euthanasia and low stress handling. The modules include both presentations about current science and technologies, and hands on activities where the knowledge is put into practice and competence validated.

It is helpful to also collect written documentation when animal welfare incidents occur. Animal care and handling can be unpredictable, and even with the best training and facilities mistakes can happen. Documenting the date, nature

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of the issue and how it was dealt with provide evidence of corrective action and efforts to ensure your standard operating procedures are effective and are being followed. This also can help to identify benchmarks for improvements and staff incentives.

Train your team effectively in animal care

If you have a good idea about the types of topics that you may need to respond to, and you have high quality standard operating procedures and compliance programs about animal care, the next suggestion I make is to get practice speaking about these issues. There are formal programs available for media training, through Ontario Farm Animal Council and other organizations. It is worth practicing speaking points in a non-stressful situation before having to face real questions with real outcome implications.

"Use terminology that recognizes animals as sentient beings rather than a pork chop that hasn't made it to market yet"

Animal welfare is a sensitive topic, and terminology matters. Not only should you try to communicate the factual information relevant to the issue, but also the value-based components. For example, defend the practices that are defensible but also acknowledge where actions may not have been consistent with standard operating procedures or may need refinement. Use terminology that recognizes animals as sentient beings rather than a pork chop that hasn't made it to market yet. It is also helpful to recognize questions that you may not wish to answer and have some techniques for managing these responses without appearing to be dismissive of the concern.

An important component of communicating with the public is listening to the concerns and questions being raised. Animal welfare is an issue we will be dealing with for a long time, and it is important to be realistic about the likelihood of changing a person's beliefs and

behaviours in a single interview. Outcomes you can take away from these discussions are: establishing relationships with members of the community, including those who object to your practices; identification of concerns; and new information about alternative practices that may be more acceptable. You can learn from every interaction, especially those that don't go as you expected, if you take time to debrief your experiences afterwards. ■

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Pork production costs in Europe, Canada and Brazil

By Wilfried Wesselink

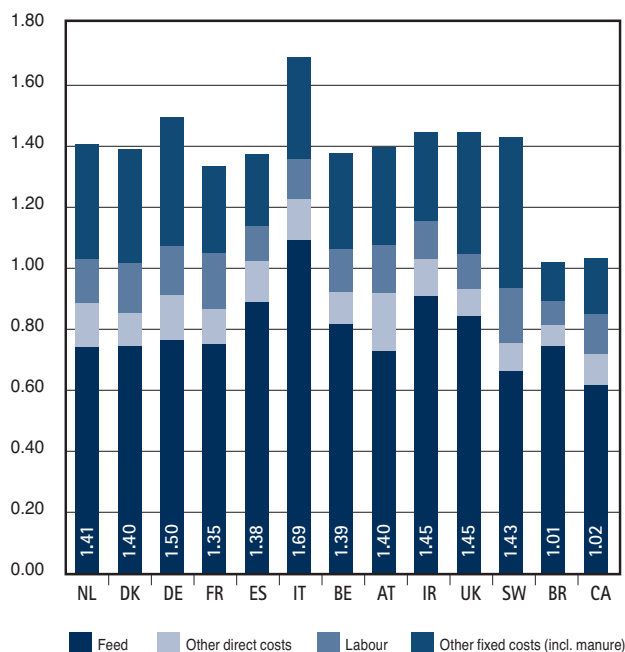
Pig production costs are a third to a half higher in Europe than in Brazil or Canada. Even within Europe there are large differences between countries. This is apparent from a recent analysis carried out by the Dutch Agricultural Economic Institute (WUR-LEI), part of Wageningen University and Research centre, together with pig industry economists in the countries concerned. This article reviews the comparisons of total production costs for 2009 and which factors accounted for the differences in costs observed.

Production costs and productivity

Production cost in most European countries is around €1.40 per kilo slaughter weight (Figure 1). France comes out on top at €1.35 per kg, followed by Spain, Belgium, Austria, Denmark and the Netherlands. The much higher costs in Italy (€1.69/kg) can be attributed to the higher slaughter weight. Canada (€1.02/kg) and Brazil (€1.01/kg) have significantly lower production costs than these European countries.

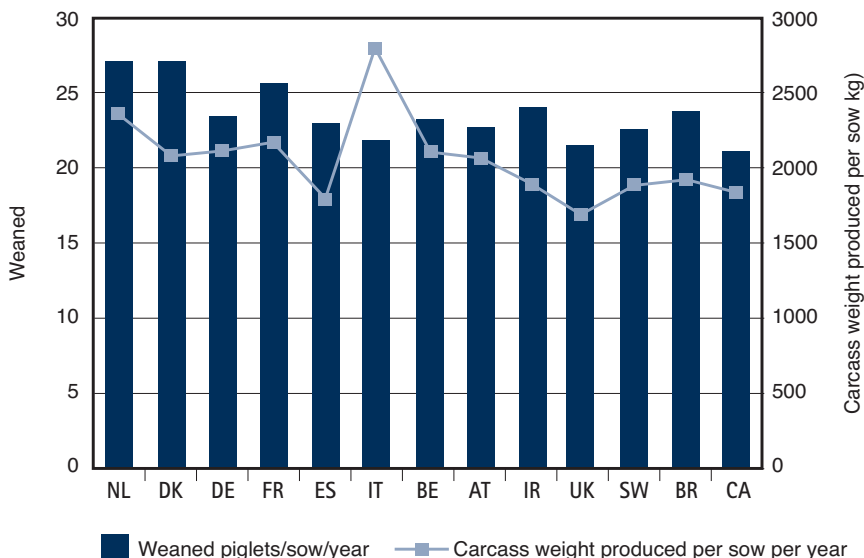
These differences in costs are greatly influenced by productivity. Denmark and the Netherlands rear 26.7 pigs per sow per year and France follows with 25.6 pigs (Figure 2). Other countries have less than 24; Austria, the UK and Italy only manage around 22. The low figure for Canada (21) is distorted because it is based on national statistics and not on the actual farm data.

Figure 1: Pork Production costs in Euros by country



CONTINUED ON PAGE 38

Figure 2: Number of piglets weaned/sow/year and carcass weight produced per sow



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The high carcass weight produced per sow in Italy is due to a high slaughter weight of 131 kg (166 kg live weight). The Netherlands is second due to the high productivity and a relatively high slaughter weight of 92 kg, followed by France, Germany and Belgium. Canada's average total carcass weight produced per sow is 1854 kg, but again this is considerably below what is achieved in practice due to the poor quality of data used in the calculation.

Feed costs

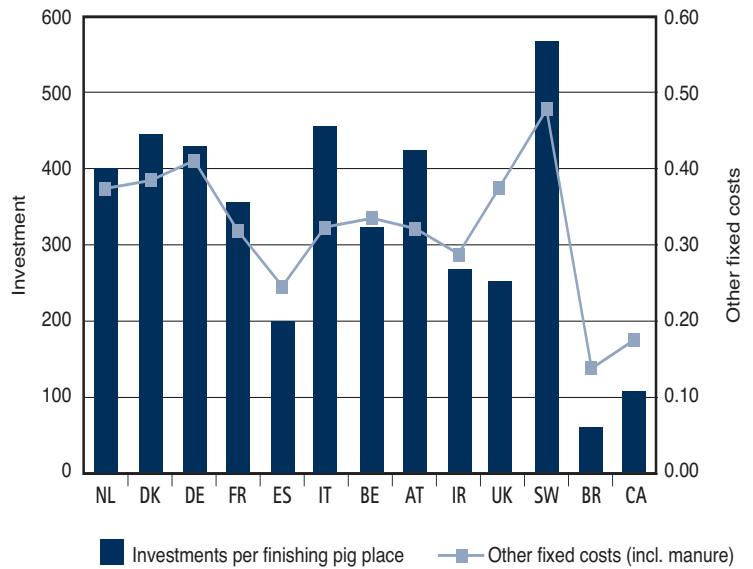
Austria and Sweden appear to have lower feed costs (€168 and €194/tonne respectively) because many pig producers mix feed on the farm. In this case labour and other associated costs are not included in the feed costs but in the fixed costs. This is partially true in Germany and for Dutch farms that use liquid by-products. When comparing the price of a tonne of complete feed in a pig unit in Europe, Germany (€203), France (€204) and Denmark (€204) have the lowest feed costs. Costs/tonne in the Netherlands are about five per cent higher partly due to the high sow productivity and consequently the consumption of more high cost feed. However, high sow productivity gives the Netherlands a favourable overall food conversion because the feed per sow is spread over more pigs. In Denmark the feed per sow per year is calculated to be 230 kg higher than in the Netherlands. In Italy, the feed conversion is strongly influenced by the high slaughter weight.

"High sow productivity gives the Netherlands a favourable overall food conversion because the feed per sow is spread over more pigs"

Other direct costs

The most important other direct costs are artificial insemination (AI), sow replacement, health and energy costs. This varies within the European countries from ten cents per

Figure 3: Investment per finishing place and total other costs for a farrow to finish unit



kg carcass in Denmark to 18 cents in Austria. Health costs in Denmark amount to 3.3 cents/kg, 3.6 in the Netherlands and 7.1 cents in Germany. The costs per sow amount to €53 in the Netherlands and €104 in Germany. Size of the farm plays an important role. The sow replacement rate in Denmark is 54 per cent, higher than that in Germany (43%) and the Netherlands (42%). These costs amount to €54 per sow in Denmark, €56 in Germany and €36 in the Netherlands. In Germany the price of breeding gilts is high.

Labour

Brazil has the lowest labour costs. Low hourly wages of €2.40 compensate for the high labour input of 29 hours per 1,000 kg carcass weight (for a farrow to finish farm). The Netherlands has the lowest labour input of just 6.9 hours followed by Denmark with 7.2 hours. In both countries, high



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average wages of €20.70 and €21.50 per hour stimulate labour efficiency. According to the analysis, Canada has an intermediate labour use of 12.6 hours/1000kg and an average cost of €12.73/hour (\$17.57).

Other fixed costs

Other fixed costs include housing, capital, levies and manure disposal. Within Europe, Spain has the lowest cost of investment at €200 per finishing pig (Figure 3). In Belgium this is €320 and the highest is in Sweden at €565. High welfare demands in Sweden, where the law requires one square metre of floor space for each finishing pig, contribute to this. Italy also has to provide one square metre for pigs due to their heavier market weight but the investment costs per finishing pig in Italy are lower at €445. In the Netherlands these are €400 while in Austria, Germany and Denmark they amount to €425, €430 and €440 respectively. In Canada they amount to €110 and in Brazil just €60.

Manure disposal

In Austria manure disposal generates 0.9 cents per kilogram slaughter weight of income, but in Denmark it costs 2.6

cent, in Germany 3.0 cents, France 3.4 cents and in Belgium 4.6 cents. In the Netherlands it costs 7.8 cents/kg which is equivalent to about five per cent of production cost. On a unit with 500 sows and 4,000 fattening pigs this amounts to €90,000 per year.

Standardization

Figure 4 shows that production costs for a weaner up to a standard weight of 30 kg are lowest in Brazil at €34 followed by Canada (€40). Costs in the UK are strongly influenced by the exchange rate of the British pound and the same factor also applies to Sweden. Lower costs in France are largely due to low feed prices. The cost of piglet production in Brazil is a little lower than in Canada but due to the higher slaughter weight in Canada (nearly 93kg) compared to Brazil (87 kg) the total cost price in Canada is €1.02, virtually the same as in Brazil (€1.01).

Changes in feed prices

Danish pig producers usually make an annual contract with their feed supplier so there is much less fluctuation in feed price than for example in the Netherlands. Changes in feed

CONTINUED ON PAGE 40

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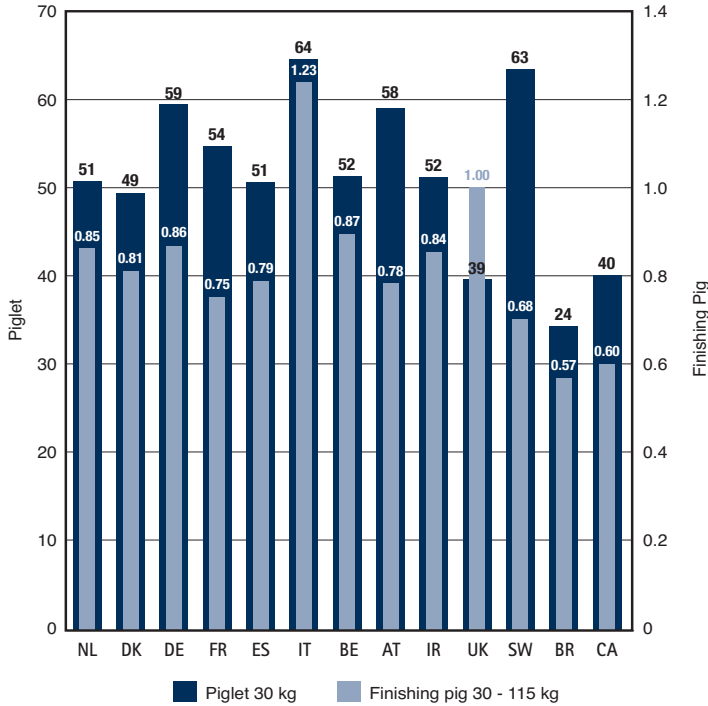
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Figure 4: Production costs per 30kg weaner (€) and per kg liveweight gain from 30 - 120kg (€/kg)



in daily gain between Denmark and the Netherlands is partially due to the higher weight at which piglets enter the finishing barn and the lower slaughter weight in Denmark. The Pietrain is the main cause of a lower daily weight gain in Belgium and to some extent in Spain where the warm climate also has an effect. The top countries have a feed conversion (standardized over 30-120kg) of about 2.8 to 2.9. Canada and the Netherlands have the lowest feed conversion efficiency.

"In terms of daily weight gain per pig, Canada is the highest, followed by Denmark and Sweden"

The highest are in Belgium, and in Italy, the latter due to the high slaughter weight. In Spain, the high feed conversion combined with high feed prices lead to a high feed cost per kilogram deadweight.

Social costs

Differences in regulations lead to differences in production costs between countries, both within and outside Europe. Firstly, there are differences in national regulations within the EU, but also in their interpretation, implementation and enforcement.

If in 2013 all pig producers in all countries abide by the regulations (sow stalls are being partially phased out by the end of 2012), the costs in the Netherlands will clearly be higher. In this country the costs of social obligations already amount to 23 cents per kilogram slaughter weight. The Netherlands already pays a high price for manure disposal (around eight cents/kg) as well as for restrictions on emissions (at least 3.5 cents).

The cost of animal welfare includes living area and group housing. The EU space requirement for a finishing pig is 0.65 square metres. Germany and the Netherlands require 0.75m² and 0.8m² respectively.

prices have a delayed effect in the Netherlands because the feed industry buys in raw materials over the long term. Also some producers use liquid feed. Feed prices can fluctuate much more if demand for raw materials increases - not only for feed but also for bio-fuels - and due to a reduction in global supplies.

Finishing weight gain and efficiency

In terms of daily weight gain per pig, Canada is the highest, followed by Denmark and Sweden (Figure 5). The difference



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EU countries also have a feed price disadvantage due to the limited availability of genetically modified raw materials. The disadvantage is calculated at 1.1 cents per kilogram. Also, the ban on the use of feed from animal origin and antimicrobial growth promoters has increased production costs.

Production rights

If a farm doubles in size every 15 years, the Dutch production rights for the expanded unit amount to at least nine cents per kilogram slaughter weight. Across the whole farm the costs for production rights increase by 4.6 cent per kg slaughter weight.

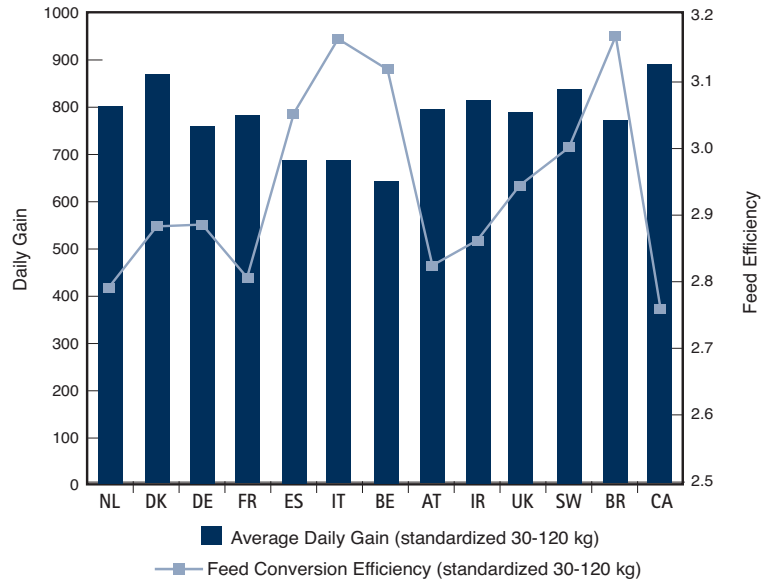
The future

The range in cost price within a country is often more than between countries. Even so, as we head towards 2013, the Dutch face a disadvantage with regard to ammonia emissions, cost of manure disposal, production rights and space per finishing pig. For a farrow to finish unit with 500 sows and 4,000 fattening pigs the cost of manure disposal is €90,000. The Netherlands imposes stronger demands on pig welfare than the EU requirement and lays down stricter regulations on group housing than for example France, Spain or East European countries.

When it comes to large scale meat production and connections to the supermarkets, Germany, Denmark and the Netherlands are at the forefront. This opens up possibilities for an intermediate segment for pork with additional welfare claims.

The current EU policy regarding genetically modified organisms, feed of animal origin and the absence of welfare demands in the WTO negotiations, have a very negative effect on the cost price development and the competitiveness of the European pig sector compared with countries outside Europe. ■

Figure 5: Average daily gain and feed conversion efficiency from 30 - 120 kg



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Cooler nights for nursery pigs cuts costs

Reducing nursery room temperature at night by around 10°F can save utility costs without impacting pig performance, according to Lee Johnston and Yuzhi Li of the West Central Research and Outreach Center of the University of Minnesota.

Reduced Nocturnal Temperature (RNT) is simply the reduction in temperature of a room during night-time hours when the pigs are less active and sleeping, explain the researchers. During this period, pigs tend to lie close together so they conserve body heat, which could allow reductions in the room temperature.

In general, newly weaned pigs require a relatively high room temperature (over 80°F) to maintain acceptable pig comfort and performance. Such a high room temperature requires extensive supplemental heating so there may be opportunity for significant savings by reducing the room temperature for a portion of each day. RNT may also be useful in the early stages of growth in wean-to-finish barns and grow-finish barns.

Many modern, computerized room controllers allow managers to establish different set-point temperatures

for a room at different times during the day. A 'normal' temperature is set during the daytime hours (07:00 to 19:00) and a cooler set-point temperature is selected for night-time hours (19:00 to 07:00). When the cooler night-time temperature takes over, it is important to allow the room to cool down gradually rather than having the controller try to achieve the cooler temperature rapidly.

Researchers found that RNT was a useful management practice for nursery pigs in the 1980s but the practice was not widely adopted. As fuel prices climb, there is now more interest in the practice. Modern room controllers, not available previously, allow easy implementation of the altered temperature regimen. Modern, rapidly growing pigs generate more heat than older genetic lines so pigs might be able to adjust to cooler night-time temperatures more easily than older genetics. Finally, the recent interest in reducing the carbon footprint of pork production encourages producers to reduce their consumption of fossil fuels.

Clearly, the primary benefit is reduced use of heating fuel that leads to lower cost of production. The primary potential risks are associated with decreased growth rate and efficiency of growth, increased variability in pig performance, and elevated morbidity and mortality associated with chilling especially in light-weight pigs.

"There was a 17 per cent reduction in heating fuel use and a nine per cent reduction in use of electricity"

Recently, three universities (University of Minnesota, University of Nebraska, University of Missouri) evaluated RNT in swine nurseries. In the RNT rooms, night-time set-point temperatures were reduced 10°F from the daytime temperature beginning at 19:00 until 07:00. The temperature reductions began seven days after arrival in the nursery when pigs were about four weeks of age. Temperatures were held constant during the day and night in the control rooms.

Pig performance was not different between control and RNT rooms. However, there was a 17 per cent reduction in heating fuel use and a nine per cent reduction in use of electricity. These savings translated into savings of about \$1.60 per pig in the nursery.

Since pig performance was not affected by a 10°F reduction in temperature, the authors are investigating a larger temperature reduction of 15°F in an experiment funded by the Minnesota Pork Board. They are also beginning the RNT regimen on the fourth day after pig arrival in the nursery, measuring pig performance, use of heating fuel and pig behaviour. Results of this more aggressive approach will be available later this year. ■



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Foreign worker programs see important changes over the past years

Recruitment and retention of staff remains a significant issue in the western Canadian pork industry, notes Marvin Salomons of Salomons Group Solutions, Red Deer, Alberta. In Alberta and other parts of western Canada labour issues have been exacerbated by the lure of good salaries in the oil patch and on construction sites, he says. This leaves many swine units continuing the struggle to find good staff to perform a job that typically offers lower pay and style of work that many don't see as a long-term career.

In the end, pork operations like many other intensive livestock businesses have resorted to recruiting temporary foreign workers (TFWs) with the hope that many recruits find the work attractive enough to stay on permanently. Recruitment and retention of TFWs is not an easy process in itself, Salomons points out. Today it is fraught with paperwork, changing rules, stricter application procedures, tighter processes and a level of regulated wage rates that leaves the industry struggling to compete and grasping for solutions. He looks at how the TFW program has changed and what producers must do to ensure the process for recruiting a foreign worker goes smoothly.

A time-line of changes

In the early 2000's not every producer was trying to hire TFWs. Somewhere along the way the labour market changed and before long most pork farms were starting to experience significant labour shortages and finding it more difficult to attract new staff to their pig operations. This was especially true for operations located in remote areas of any Province. Looking back, the TFW program was more simplistic and it was relatively easy to get the paperwork done and hire a worker from outside the country. In those days work permits for TFWs were granted for at least two or perhaps three years and extensions were the standard and an easy option. Life seemed better back then.

As the TFW program grew in popularity and size, Human Resources and Skills Development Canada (HRSDC) saw a need to put in more restrictions and enhanced hiring requirements. Many agreed some of it was needed to better protect TFWs and to also ensure employers were doing everything possible to hire local Canadians first.

"Pork technicians, especially really good ones, are hard to find at any time"

Yet, for the pork sector hiring locally usually was and still remains a less viable option. Pork technicians, especially really good ones, are hard to find at any time and even harder to retain. Many farms are able to find low-skilled workers (NOC 8431 –

General Farm Worker) by hiring local or part-time people, but the higher-skilled, knowledgeable worker (the NOC 8253 – Skilled Livestock Worker) remains a scarce commodity.

By 2006-07 some significant changes came down the pipe from HRSDC that started to have a serious impact on the entire pork industry. This was especially true for operations in Alberta where HRSDC lumped the labour issues experienced by the oil and gas sector in with the primary agriculture sector. The rules were the same but the issues were really quite different. The new requirements that were needed for the oil and gas sector were applied equally to pork operations. Granted some of these changes over the years made by HRSDC, Service Canada, and Citizenship and Immigration Canada (CIC) have been positive for both workers and employers, yet the more recent changes have had a significant negative impact on the pork industry.

A number of changes to the overall TFW program have taken place over the past couple years. The following noted here are more closely tied to the processes having a direct impact on the pork sector:

- **February 2007:** The maximum period work permits were valid for low-skilled worker classes



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increased to two years. Previously they had to reapply after one year. This was a positive move and allowed employers to keep low-skilled workers longer as well as providing greater job stability for workers.

- **January 2009:** HRSDC introduced new national advertising requirements for all occupations applied across all regions. Strict advertising requirements were introduced that included a 14-day advertising requirement on the Canada Job Bank (www.jobbank.gc.ca) along with ads on other recognized recruitment channels. During this same period of time HRSDC introduced an “on-line” Labour Market Opinion (LMO) approval system that is still in use today. This change touted Service Canada’s commitment to easier application processes for LMOs, improved processing times, and allowed federal agencies such as Service Canada and CIC to jointly view LMO files.
- **April 2009:** HRSDC launched a monitoring initiative. This was a means by which Service Canada could assess and encourage employers to voluntarily demonstrate compliance to the TFW program and compliance with the terms of TFW contracts and worksite agreements. Again it was seen as a positive step.
- **May 2009:** HRSDC reduced the time period that LMOs remain valid to 6 months, down from 12 months. In addition, once an LMO was assigned to a TFW it could not be used again. This caused many hardships for employers as it forced them to constantly apply for a new LMO. It also made employers reluctant to put a candidate’s name on an open positive LMO without being 100% sure the candidate would accept the job and pass the visa processing formalities. Any hiccup along the way and the process would have to start over.
- **March 2011:** HRSDC introduced a series of new LMO application forms and processes. New forms specific for each employment stream replaced the existing standard LMO form that had been used across all categories. As a result using the right new form is now a critical step in

making an LMO application. All LMO forms submitted after April 1, 2011 are required to use the new stream-specific forms. Failure to do so will see applications returned. All forms are available on-line and HRSDC indicates web-based applications will again be put in place hopefully returning sometime during June 2011.

Four streams are currently available for employers looking to hire agricultural workers. They can be found at the following web link: http://www.hrsdc.gc.ca/eng/workplaceskills/foreign_workers/fwp_forms.shtml. Two of the four forms are for workers hired via the Seasonal Agriculture Worker Program (SAWP) as well as for low-skilled workers with no formal training. Currently only Quebec pork producers are able to access the SAWP program through a special agreement with HRSDC. The SAWP program is essentially a very short-term hiring program. Producers in western Canada really only need to target the following two streams / LMO application forms:

1. LMO form #EMP5512 -- **Low Skilled Occupations Stream** - Pilot Project for Occupations Requiring a Lower Level of Formal Training (NOC C and D) (i.e. NOC 8431 – General Farm Worker).
2. LMO form #EMP5517-- **High Skilled Occupations Stream** (i.e. NOC 8253 – Skilled Livestock Worker).

“Cumulative employment time limits in Canada have now been placed on many temporary foreign workers”

- **April 2011:** Several recent changes were introduced including:
 1. HRSDC conducting a more rigorous assessment of the genuineness of a job offer. A greater emphasis is now being placed on employers proving their need for a TFW and their inability to hire local Canadian workers first.
 2. Employers who fail to live up to their agreements / contracts with their TFWs with respect to the specific job position, the wages, or the working

CONTINUED ON PAGE 46

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conditions run the risk of being denied authorization to hire TFWs in the future for a period of at least two years. HRSDC notes employers will be given ample opportunity to explain their side of the situation if issues arise.

- Cumulative employment time limits in Canada have now been placed on many TFWs. After a four-year work term workers will now have to wait four years before becoming eligible to again work temporarily in Canada. This change does not affect their eligibility for permanent residency (PR). TFWs can still apply for PR at any time while they are legally in Canada or after they leave, assuming they qualify. This new change emphasizes the importance of employers hiring workers that meet eligibility requirements of Provincial nomination programs such as the Alberta Immigrant Nominee Program (AINP). Recruiting the right person in the right NOC code category at the very start ensures that a successful application to nominee programs can be made down the road and in a time sensitive manner. All too often employers recruit low-skilled (NOC 8431) workers who do not qualify for AINP. It is important to note that for the AINP only skilled (NOC 8253) categories qualify for nomination. Employers hoping their TFWs qualify for AINP often find that is not the case and workers who had hoped to stay end up having to return home.

Important steps to “follow to the letter”

HRSDC has outlined a number of new criteria employers must follow in hiring TFWs. The Service Canada officers in assessing LMO applications use the criteria. Producers should familiarize themselves with the information on this website (http://www.hrsdc.gc.ca/eng/workplaceskills/foreign_workers/temp_assessment.shtml) as failure to follow these requirements to the letter will ultimately see LMO denials or application forms returned.

Follow these major points to avoid any pitfalls:

- The job description used for the job, for the contract, and in the advertising of the job must match closely to the NOC code being used for that specific job (i.e. NOC 8253). Adherence to this rule will reduce the challenges faced by Service Canada officers in conducting reviews of LMO applications.
- The wage rate or range used for the job position must be noted in the ad and must meet or exceed the average wage rate specified for that NOC code and for the area of the Province the job is located in. It must match or exceed the posted rate on the Labour Market Information (LMI) website (<http://www.labourmarketinformation.ca/standard.aspx?ppid=43&tlcode=eng>). For Alberta producers this can be frustrating because the rates are rigidly applied, yet is a critical point that must be followed in the advertising and in the details of all LMO applications. Failure to do so will likely result in a LMO application being denied.
- Advertising for the job being applied for must be done on the Canada Job Bank (www.jobbank.ca) for a minimum period of 14 days and within a period of 3 months prior to applying for an LMO. In addition at least one other recognized form of advertising must be undertaken again for a minimum of 14 days and in the form of websites, newspapers, bulletin boards, etc. All advertising must be completed prior to the actual LMO application being made.

Processing times

It is risky to cite current processing times for LMO approvals. Processing times are always highly dependent on application volumes. Service Canada does however make efforts to speed up processing times and often does so by moving applications between the Alberta and BC processing centres with the intent of maintaining processing times within acceptable limits. As of May 2011 processing time was about 4 to 5 weeks.

Recruitment and retention of foreign workers is a key part of many pork operations in Alberta and other parts of western Canada. Managers need to make themselves fully aware of the constant changes in regulations and processes that constantly take place. Failure to do so will often lead to undue anxiety and disappointment for both workers and employers. ■



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Effective use of PG 600® in gilt management

By Charles J. Francisco, DVM, MS; Director of Swine Technical Service, Intervet/Schering-Plough Animal Health, US and Francisco de Grau, MVZ, EPA, DVM, DVSc.; Technical Services Manager, Intervet Canada Corp.

Today, swine production systems have taken many steps to improve the throughput and efficiency of their operations. Some examples include: improved genetic base, artificial insemination, weekly breeding/farrowing and all-in/all-out production. One area that has had considerable change is the breeding herd. Today, many commercial herds have high turnover. Causes are many, genetic improvement, longevity or disease. With high replacement rates, there is a high dependence on replacement gilts.



To me, the gilt is the central and most important animal on the sow farm. She is challenged when compared to her older parity pen-mates. The replacement gilt has lower conception rates, reduced oestrus expression or lack of heat, poor timing (doesn't come in heat when you want) and produces fewer pigs in her 1st litter.

To complicate matters further, environmental stressors can challenge the replacement female even more. Lactation length and intake, body condition and seasonal anoestrus will also affect the performance of the new breeding animal. Finally labour and capacity constraints will also affect breeding herd efficiency, do I have enough time and space to properly manage this "fragile female"?

"Off-site breeding or 'GO' barns, focus entirely on gilt reproductive and immunological development"

There are a number of solutions that many producers use. Most will breed the replacement gilt on the 2nd or 3rd oestrus. It is proven that by skipping the 1st cycle, born alive and conception rate improves. Flushing will improve ovulation rate. Good boar exposure is also essential to stimulate puberty. Transportation stress or mixing will induce oestrus. Larger gilt pools or off-site breeding projects are also being used. Off-site breeding or "GO" barns, focus entirely on gilt reproductive and immunological development. Finally, PG 600 can be used to facilitate oestrus presentation.

There are disadvantages to all of the solutions that I previously mentioned. If we skip-cycle gilts, we accrue non-productive days. Everyone has a different value for his or her non-productive day, but the fact remains, if the gilt is eating, taking up space and is non-pregnant, she is costing

CONTINUED ON PAGE 48

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you money. Nutritional flushing may be difficult in pen situations. Boar exposure takes time. Transportation stress will induce, but how many? Off-site breeding programs are expensive. And, PG 600 costs money! However, the cost: benefit of this product is not clearly understood.

When PG 600 was introduced, it was labelled for oestrus induction in pre-pubertal gilts, that is, gilts that have not yet shown any observable signs of oestrus. For review, PG 600 contains PMSG which is FSH or follicle stimulating hormone like and HCG which is LH or luteinizing hormone-like. Both hormones are essential for normal reproductive cycles. When it is given to a non-cycling female, it "jump starts" the ovaries to start the oestrus cycle. By doing this, one can induce oestrus and breed after oestrus onset. There are considerations: Non-productive days, reproductive performance and 1st vs. 2nd or 3rd oestrus mating.

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Table 1: Performance of gilts bred at various ages following oestrus induction

Age/Wk	Number	No. Born	Born Alive	Birth Weight
24-26	39	7.77	7.13	20.7
27-29	110	7.95	7.71	22.3
30-32	87	8.97	8.45	23.5
33-35	39	8.84	8.19	23.7
> 36	43	8.98	8.56	25.6

(Technical Report No. 10, Isler 1990)

If you are like me, before I invest in anything, I want to know what my return will be. I like to save more than I spend! The cost: benefit is determined by: the cost of treatment + loss of live born (if we mate on 1st oestrus) and the benefit will be the decrease in non-productive days plus labour savings. There are other benefits, primarily gilt pool size which I will cover too.

Dr. Gene Isler conducted a study several years ago where he induced gilts at varying ages with PG 600 and then bred on induced oestrus. He compared reproductive performance by age.

The results show what many researchers have found: as the animal matures,

born alive increases. Birth weights also increase. This makes physiological sense because the more mature the gilt, the more she is developed. This will also hold for lactation performance.

One can plot this data and do an analysis known as "Linear Regression". What that means is to plot the points and assume there is a linear or straight-line increase over time. We can use breeding age as our time variable and born alive as our outcome. From this, we can produce an equation to predict born-alive for varying ages at breeding. The convention, for those who remember algebra, is: $Y = MX+B$, where y is the outcome, M is the slope, X is the age at breeding and B is the intercept.

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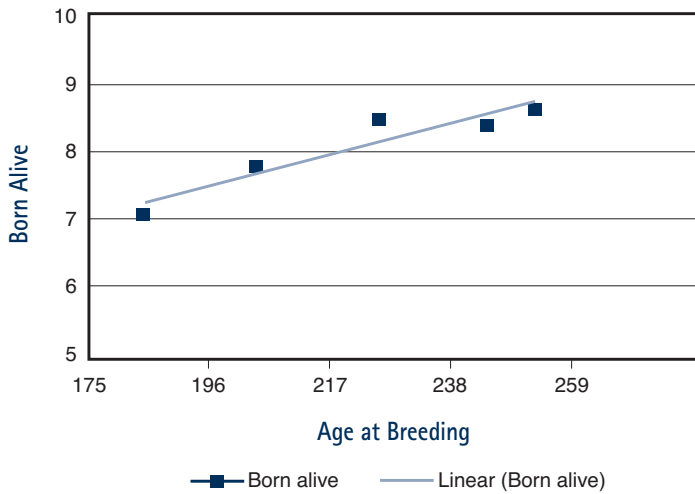
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Figure 1: The influence of P.G. 600 induced breeding age and born alive



Here is how it works:

Note the equation: $y = 0.0184x + 3.9365$. The slope is .0184 and the intercept is 3.9365. What does $R^2 = 0.8247$ mean? That means this equation is a great fit, or 82% of the variation is accounted for by this equation. It is very predictable. Next,

you simply plug in values for age and calculate the born alive. If we induce and breed at 180 days, we are expected to have a 7.21 born alive. However if we induce and breed at 222 days of age, born alive increases to 7.98, a difference of .77 pigs. This is very consistent with other researchers.

Now is it worth it? Let's compare the value of .77 pigs versus the cost of 42 non-productive days. $0.77 * \$36 \text{ CAD (Value of an early wean pig)} = \27.72

vs. $42 \text{ NPD} * \$2.00 \text{ day (cost of feed/sow)} = \84.00 CAD

Net loss = \$48.00 CAD

NPD will vary from system to system. To me, it doesn't make economic sense!

Next you will ask, if I breed on 1st oestrus, the life-time performance won't be as good. Truth or fallacy? Let's see.

This was Isler's data for subsequent farrowings. There were no differences in wean-to-breed interval, total born, born alive or birth weights that were significant. Dr. Roy Kirkwood published a paper in *Swine Health and Production*, July-August 2000. He compared performance over 4 parities in 3 groups, gilts induced with PG 600 and bred, gilts induced with PG 600 and skipped and controls (bred on 1st cycle). He found total pigs produced over 4 parities to be:

CONTINUED ON PAGE 50

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Table 2: The effect of P.G. 600 on subsequent farrowing performance

Age at first breeding	Wean to breed	No. Born	Born Alive	Birth Weight
24-26	12.1	9	8.9	29.3
27-29	13.7	8.72	8.46	27
30-32	12.1	9.33	8.9	27.1
33-35	12.3	10.4	10	32.4
> 36	11.2	8.87	8.61	27.1

- 45.8 - induced and bred
- 45.1 - induced and skip-cycle (bred on 2nd or 3rd oestrus)
- 45 - controls

Under the conditions of this recent study, PG 600 induction and breeding on induced oestrus produced no adverse effect on subsequent sow performance.

Finally, let's examine the effect of PG 600 on gilt pool size. In this study, groups of 100 gilts were followed over a 30 day period.

One hundred were injected with PG 600, 100 served as controls. All received good boar exposure. Note that in 5 days only 25 controls came into oestrus and 52 injected animals exhibited oestrus. As the length of time increases, more gilts that were injected show oestrus versus controls. In order to calculate gilt pool size, we need to know how many will naturally come into oestrus over a fixed time.

"PG 600 induction and breeding on induced oestrus produced no adverse effect on subsequent sow performance"

For controls at the end of 30 days, only 58 showed oestrus. Therefore 100 divided by 58 = 1.72. Therefore one needs 1.72 x more gilts in the pool to attain target at the end of 30 days. As you can see, the effect of PG 600 is greater when shorter time frames are required. In 30 days, many will cycle anyway. This is why many producers maintain 30-60 day inventories of gilts to maximize oestrus onset. The replacement factor for PG 600 would likely be greater in 30 days if gilts are optimum age and, if PG 600 was given subcutaneously (SQ) versus intramuscularly (IM) (published data, Knox et al in *Journal of Animal Science*, 2000).

To summarize, I believe you have two options with PG 600 for gilt management:

- Option 1.** Induce gilts at 190 days of age and breed on 1st oestrus
- Option 2.** Induce at 180 days of age and breed on 2nd oestrus

Option 1 is my preferred method. It takes advantage of reduced non-productive days and in my view will result in the greatest return for your investment. I must emphasize that good management is essential and there are undoubtedly genetic differences in terms of age when to initiate. Feed intake during lactation is extremely important as well as body condition following weaning. Don't lose what you gained by breeding this animal earlier!

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Table 3: The effect of PG 600 on gilt pool size

Days after treatment	Control	PG 600	Replace factor control	Replace factor PG600
5	25	52	4.00	1.92
10	41	59	2.44	1.69
14	45	63	2.22	1.59
21	52	67	1.92	1.49
28	58	73	1.72	1.37

Finally, for what it's worth, I will leave you with the current practice of PG 600 used in gilt pools. Many use PG 600 as a "clean-up". This will work to some degree. However, gilts that are left at the end of 30 days are probably not the best candidates for PG 600. Have they cycled and were missed? If so, you only have a 30% chance that PG 600 will show an effect. Those odds are not very good! At the end of the day, consider maximizing return on investment and performance potential. Consider PG 600 as a production drug. ■

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Feeding lentil to weaned pigs

By Jose L. Landero¹, Eduardo Beltranena^{1,2}, Ruurd T. Zijlstra^{1,*}

¹University of Alberta, Edmonton, AB; ²Alberta Agriculture and Rural Development, Edmonton, AB *Email: ruurd.zijlstra@ualberta.ca

Take home message

Prices of the traditional feed ingredients for pig diets remain high. Pork producers continue to search for ways to reduce feed cost, including the use of alternative feed ingredients. Lentil is a non-oilseed legume seed or pulse crop primarily grown for human consumption. Lentil seed contains less crude protein and amino acids than soybean meal, but has a slightly higher net energy value. Lentil can be a cost-effective source of dietary protein and energy replacing soybean meal when excess production or low food-grade lentil is available for inclusion in swine diets. We evaluated feeding increasing levels of lentil (0, 7.5, 15, 22.5 or 30%) to weaned pigs (initial weight 9.0 kg) for 21 days. Growth performance was not affected by feeding up to 22.5% lentil, but 30% lentil reduced weight gain and feed efficiency by 11%. In conclusion, lentil inclusion should not exceed 22.5% in diets for weaned nursery pigs to maintain similar performance as for soybean meal diets.

Why lentil?

Lentil is an important export legume seed produced in western Canada. Most of the lentil production (1.3 M tonnes) is exported to the Indian subcontinent and the Middle East for human food consumption. Due to quality concerns of this year's Canadian crop and the large increase in domestic pulse crop in India, lentil is available for feed at 40% of regular cost.

Compared to soybean meal, lentil contains less crude protein (18 to 35%) and amino acids, but provides more net energy. Similar to other legume seeds, lentil has a low sulphur amino acid content.

Replacing dietary soybean meal with lentil could have an economic advantage when surplus production or low food-grade lentil is available for inclusion into swine diets. However, the anti-nutritional factors contained in lentil seed might limit its inclusion, especially in diets for young pigs.

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"Reports indicate that substitution of soybean meal with up to 30% of lentils in the diet does not reduce weaned pig performance"

Limited research has been conducted feeding lentils to swine. Previous reports indicate that inclusion up to 40% of lentils, entirely replacing soybean meal in the diet, may not affect growth performance of grower-finisher pigs. The recommended inclusion in diets for weaned pigs is 10 to 20%. Some reports indicate that substitution of soybean meal with up to 30% of lentils in the diet does not reduce weaned pig performance. More research is needed to validate

CONTINUED ON PAGE 54

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this information and determine the optimum level of lentil inclusion in diets for weaned pigs. The weaned pig is a more sensitive model for feed ingredient evaluation than grower pigs.

Nutrient profile of lentil

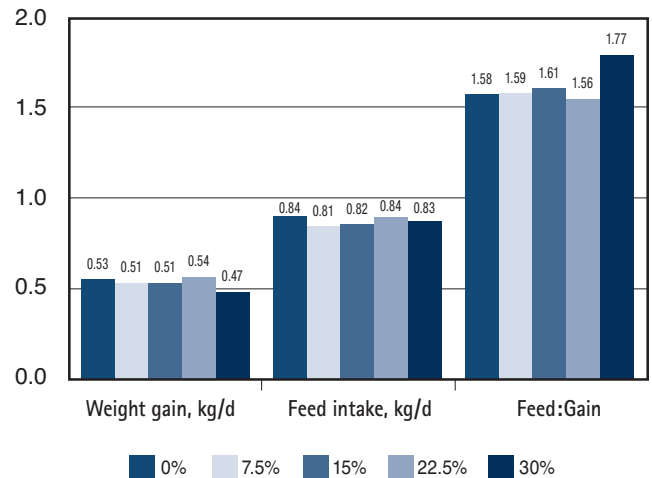
The green lentil sample used in our trial was sourced from SaskCan Pulse Trading, (Rosetown, SK). The sample contained 27.3% crude protein, 1.0% crude fat, 4.1% crude fibre, 1.75% lysine, 1.62% available lysine, 0.89% threonine, 0.19% methionine, 0.42% phosphorus, and 3.0 mg/g of trypsin inhibitor activity (TIA). This level of TIA is normal for lentil, slightly higher than for field pea, and lower than for chickpea.

The weaned pig trial

The weaned pig trial was conducted to evaluate the effects of feeding increasing levels of lentil (0, 7.5, 15, 22.5 or 30%) on growth performance and diet digestibility. The trial was carried out at the Swine Research and Technology Centre in Edmonton at the University of Alberta.

The diets fed were formulated to provide 2.33 Mcal/kg net energy (NE) and 5.0 g standardized ileal digestible lysine per Mcal NE with other amino acids formulated as an ideal ratio to lysine. Increasing lentil level progressively replaced the soybean meal in the diets so that 20% soybean meal and 10% wheat

Figure 1: Growth performance of piglets fed increasing levels of lentil in diet



was gradually replaced with 30% lentil with a correction for energy and amino acids using canola oil and synthetic amino acids. The diets contained 5% lactose and 5% herring meal, as specialty ingredients. In total, 240 weaned pigs of 9.0 ± 1.6 kg in initial weight housed in 60 pens of 4 pigs each had free access to an assigned pellet diet for 3 weeks. Individual pig body weight and pen feed disappearance were measured weekly.



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Weaner pigs can be fed a diet containing up to 22.5% lentil without affecting growth performance

Trial results

For the entire 21-day trial, increasing lentil inclusion linearly reduced daily weight gain (Figure 1). Differences in feed intake were not observed during the 21-day study. Pigs maintained final body weight up to 22.5% inclusion of lentil, with similar daily weight gain and feed efficiency. The 30% inclusion of lentil caused an 11% drop in both daily weight gain and feed efficiency and reduced body weight by 6% at the end of the trial. Pigs fed 30% lentil were 1.3 kg lighter, than pigs fed diets without lentil by the end of the trial.

"Pigs can tolerate substantial amounts of lentil in the diet before growth performance is finally reduced"

Increasing the dietary inclusion of lentil linearly decreased the total tract digestibility of crude protein from 82.1 to 79.8% and diet digestible energy value from 3.86 to 3.76 Mcal/kg of DM. The reduced nutrient digestibility was expected based on gradually increased dietary fibre and ANF content. Interestingly, the gradually reduced diet nutrient digestibility did not coincide with reduced growth performance, indicating that pigs can tolerate substantial amounts of lentil in the diet before growth performance is finally reduced.

Cost vs. benefit

Assuming wheat at \$207, lentil \$215, soybean meal \$420, and L-lysine-HCl at \$2,550/tonne, increasing dietary lentil inclusion from 0 to 7.5, 15, 22.5, and 30%, reduced feed cost by \$1.54, \$2.60, \$4.13, and \$5.19 per tonne, respectively. For 22.5% inclusion of lentil, feed cost per unit of body weight gain was reduced 0.64 cents/kg. However, due to reduced animal performance, increasing lentil inclusion up to 30% increased feed cost per unit of gain. Feeding more than 22.5% lentil in the diet was not cost-effective.

Recommendation

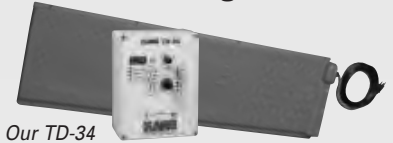
Lentil is locally produced pulse seed and a potential source of supplemental protein in pig diets. Feeding up to 22.5% lentil in the nursery diet as a replacement for soybean meal did not impact growth performance of weaned pigs. However, feeding 30% lentil caused a marginal reduction in growth performance with an economic disadvantage. The results of this study indicate that lentil inclusion should not exceed 22.5% in diets for weaned nursery pigs to maintain similar performance as those fed soybean meal diet.

Acknowledgment

Funding from the Alberta Livestock and Meat Agency is acknowledged. ■



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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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Reap the benefits of improving welfare on your farm

By Dr. Dawn Magrath, Innovative Veterinary Services Inc., Lethbridge, Alberta

It has been said that “welfare is not a scientific concept, but the reaction of a social value system that people developed to express their concerns about how animals are treated”. It is certainly a difficult topic to quantify scientifically, as people’s emotions which come into play cannot be measured, compared to average daily gain, which can obviously be quantified.

In the field, I often find that producers are skeptical about animal welfare. They think there are people in research labs deciding how animals should be raised and that those scientists have no concept of the “real world”. They feel that the requirements that they make are “just not feasible”. Areas of husbandry such as decreasing stocking density most likely will only improve performance, rather than decreasing it; but we need to find a balance that still allows production to be cost efficient.

The concern for legislators making decisions on animal welfare is a very real one. Dr David Fraser at the University of BC stated “unless veterinarians and scientists can deal with the problems, then legislators and referenda may do so instead. The outcome may certainly be less favourable to animals and producers”.



Veterinarian Dr. Dawn Magrath recommends a fully bedded hospital pen, with small numbers of pigs per pen to allow more attention to sick pigs. (Photo courtesy of Willow Creek Colony, AB)

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I think it is important to realize that often what is perceived to be beneficial for animals, isn’t always the case; sometimes we do need to bridge the gap between research and what is actually feasible to put into everyday practice. As a swine veterinarian, I feel it is my responsibility to help producers make sense of the research and be able to put the information to good use rather than ignoring it.

It is a good thing to make welfare a priority on your farm. Your operation will become more profitable as a result and staff morale will certainly be increased. For example: taking a proactive role in treating a sick pig quickly and moving it to a hospital pen if possible. We can scale pigs from A to E; **A** (early signs of illness), **B** (illness is progressing), **C** (advanced illness, will quickly become an E pig) or **E** (requires humane euthanasia)*. If we treat pigs when they are A pigs, they will have a much higher chance of recovery, rather than waiting until the pig is a B or C pig. By treating a C pig, we have allocated money for labour and medication for the treatment of the sick animal and the staff member is likely dejected because the attempted treatment was unsuccessful.

I recommend a fully bedded hospital pen, with small numbers of pigs per pen to allow more attention to sick pigs. Bedding can be extremely important when it comes to pigs with lameness issues and can really speed healing and reduce pain.

Discuss with your veterinarian areas that your farm may be able to improve animal welfare and tools that you can implement such as the **ABC** program. Ask them to help you develop standard operating procedures around welfare topics and discuss them with all members of staff.

Don’t be afraid of welfare or, as I like to refer to what it really is: Good animal husbandry. It won’t cost you a penny, but the rewards can be huge for our whole industry! ■

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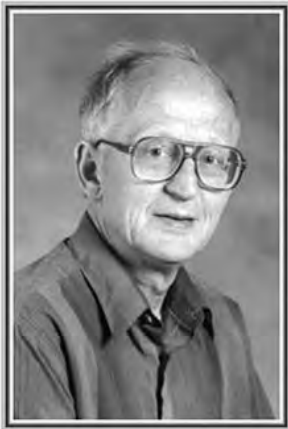
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Swine Dysentery: is our old friend back?

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

It's that time of year again. Time to dust off the barbeque, clean up the grill and take a close look at what you left trapped in the cooler over winter. For better or worse it's time to get ready for the inevitable return of summer guests, visitors and relatives alike, drawn by the promise of your free hospitality and farm fresh pork lighting up the grill. It's all just a little too inviting for our city cousin's senses. Of course, what would a good barbeque season be without a few unwanted surprises on the guest list? Well here's another one to consider, it looks like Swine Dysentery might be stopping in as well.



Figure 1: Mucous filled diarrhoea with small amounts of blood covering the floor of a grow-finish pen is common

Of course, Swine Dysentery caused by *Brachyspira hyodysenteriae* and Spirochetal Colitis and Typhlitis caused by *Brachyspira pilisicoli* present nothing new to pork production throughout the western world. Although a significant cause of intestinal disease to the global swine industry, for nearly two decades now we have enjoyed their relative silence in our barns. So when did that start to change? As I think back now, it was in 2009 that producers started suggesting that they were seeing diarrhoea that was not responding effectively to their traditional ileitis (*Lawsonia intracellularis*) medications. Since then, the veterinary medical community has seen moderately increasing and varied cases of dysentery and colitis.

Varied? At present it appears that there are at least two common *Brachyspira* species that are expressing themselves predominately in the grow-finish pig populations. *Brachyspira hyodysenteriae* (Swine Dysentery) leading to a

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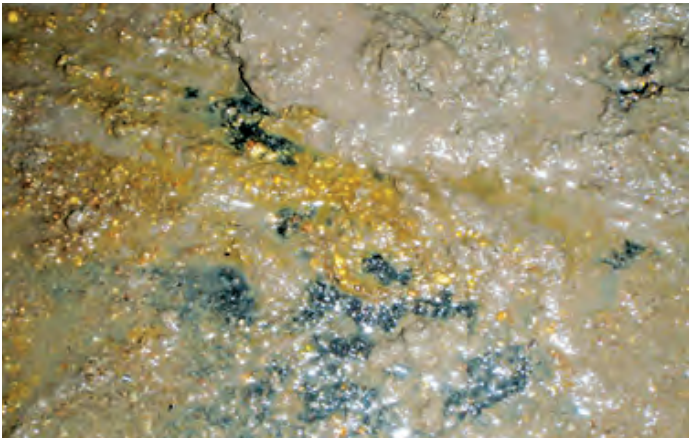


Figure 2: Blood filled diarrhoea with mucous may be seen throughout the affected groups

mucous and blood filled diarrhoea (Figure 1), and *Brachyspira pilisicoli* (spirochetal colitis and typhlitis) leading to mucous filled diarrhoea with or without blood.

Swine Dysentery (SD) is an intestinal spirochete with worldwide distribution and is most commonly observed in grow-finish pigs. Clinically the pigs present as off feed with sunken flanks, the pen will be messed, and there is large amounts of mucous with some blood found in the stools (Figure 2). The disease will steadily progress through the population infecting new animals daily, within weeks the entire group will have been affected (high morbidity). Although sudden deaths may occur, the typical progression in an outbreak situation has been development of a soft grey faeces with a decrease in feed intake, progressing to a loose mucous filled diarrhoea with or without obvious blood, and finally to death if left untreated. Without early intervention mortality can rise to 30% and fall backs will increase (Figure 3). With early intervention with appropriate injectable and water medication mortality can be held to low levels. Unfortunately, the development of immunity to this pathogen is inconsistent and most often takes multiple subsequent exposures. Treatment with antibiotics may also contribute to incomplete development of immunity.

SD can present in barns as acute outbreaks or it may become chronic in some herds, particularly in continuous flow situations. In all cases stressors such as environmental contamination and temperature fluctuations can influence the development of disease. Often, the development of immunity is difficult and the reinfection of a herd may occur within days of the removal of medication. Thus, the continued presence of medication is most often the result. There are many products labelled for the treatment of SD, unfortunately, very few are highly effective. Consultation with your veterinarian should be considered immediately

CONTINUED ON PAGE 60



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Figure 3: Pig variation and fall backs are common in affected groups

when seeing diarrhoea that has been unresponsive to your traditional ileitis medication control programs.

Spirochetal colitis is also an intestinal spirochete with the same worldwide distribution and disease patterns. Although it commonly causes a much more mild form of intestinal disease than SD, its severity can vary greatly. As with SD early intervention and appropriate treatment are necessary to minimize the impact of this disease.

The true prevalence of SD in North America is not known, and although there has been a mild increase in clinical cases, it is still commonly held that this disease is very rare. With that said, prevention through bio-exclusion (keeping stuff out), and reducing the risk of development of endemic disease through bio-management (managing what you have) are the best ways to minimize the introduction or influence of this disease in your herd. Increased scrutiny of animal movement through veterinarian to veterinarian communication should be strongly considered for all breeding stock and pig purchases. Improving your grow-finish sanitation through regular washing with appropriate detergents and disinfectants should be standard in your routine bio-management protocols. If we all work together, keeping this unwanted guest at bay is within our reach! ■



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International Round-up

TOPIGS sows average 28.1 piglets weaned per sow

Dutch pork producers using TOPIGS sows weaned an average of 28.1 piglets per sow in 2010, with the top 10% of farms achieving 30.9 weaned piglets per sow per year. The results were from 748 farms with a total of almost 337,000 sows.

Despite the increased production per sow, piglet mortality fell slightly and the average piglet mortality was 11.9%, compared to both 2009 and 2008 when it was 12.1%.

For the best 10% of farms the mortality was even lower, being just 10.4%. Ninety farms (12% of the total) weaned more than 30 piglets per sow per year, with the best farm weaning 33.3 piglets per sow per year.

These figures demonstrate that the 'balanced breeding' program of TOPIGS works. "By paying attention to vitality and piglet survival in the breeding program, sows can produce bigger litters without the piglet mortality increasing," says the company.

FDA approves surgical pig castration alternative

The US Food and Drug Administration (FDA) has approved Pfizer's Improvest® product for temporary immunological castration and reduction of boar taint in intact male pigs intended for pork. Improvest is a protein compound that uses the pig's own immune system to provide

the same effect as surgical castration, but much later in the male pig's life.

"By eliminating the need for surgical castration, the animal grows with all the inherent advantages of intact males until the second dose," notes a company news release. "Studies confirm that intact male pigs eat less feed and produce more meat, increasing feed efficiency by 6 to 10 percent, along with a typical improvement of 2 to 2.5 percent higher cutout yield." Also, since male pigs given Improvest are not surgically castrated, the risk of infection or death is eliminated, decreasing mortality by 1.6 percent, Pfizer points out.

"Studies confirm that intact male pigs eat less feed and produce more meat"

"Improvest creates an opportunity to capture more value from male pigs that didn't exist until now," said Jim Bradford, DVM, director, Team Lead, Improvest, Pfizer Animal Health. "Male pigs are given Improvest later in the finishing phase to manage boar taint, so they're able to grow to their full intact male potential, and do it more efficiently."

This technology is approved in 58 other countries around the world, including the European Union, Australia and Japan, under the related global brand, Improvac®.

Pigs are given Improvest via injection. The first dose primes the system and should be administered no earlier than nine weeks of age. The second dose should be administered at least four weeks after the priming dose.

Pigs should be sent to market no earlier than four weeks after the second dose of Improvest to allow adequate time for reduction in the compounds responsible for off-odour in pork. Marketing pigs on the Improvest program more than eight weeks after the second dose may increase the risk of off-odour in pork. Only trained, certified technicians will be permitted to administer the product as part of the quality assurance program, says Pfizer.

Alltech revives plans to construct the 'farm of the future'

Biotechnology company Alltech has revived its plans to build the "farm of the future". It would truly be a closed-loop system, according to Becky Timmons, Alltech's director of applications research, combining several systems including production facilities for solid state fermentation, aquaculture, cellulosic ethanol, algal biomass, livestock and dairy, all integrated together using a power and thermal cogeneration facility.

Timmons points to the fact that Alltech is already operating facilities throughout the world in most of the process applications that would be implemented at the farm of the future. Along with a recently opened algae production facility, the company also operates a solid state fermentation facility in Mexico and has a broad range of experience in the ethanol industry as well as the emerging aquaculture industry, Timmons explains.

She says that the entire process starts with a waste product like corn stover, or an

CONTINUED ON PAGE 62



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energy crop like switchgrass. That biomass is used at a solid state fermentation facility to make enzymes on site. Those enzymes can then be used to break down fibre for animal feed or used to break down cellulosic material for ethanol production. From the ethanol facility, the farm can then feed the onsite livestock with the DDG co-product and the wastewater created in the process can be used in the algae farms or back in the solid state fermentation facility. CO2 created from all of the processes will feed the algae photobioreactors as well and the algal biomass can either be used to feed the fish at the aquaculture facility or the oil can be extracted and used for biofuel production.

The whole process allows the facility to “recycle everything through,” says Timmons. “The elaborate facility is more economically feasible than a standalone cellulosic or fermentation facility. “Adding the different parts really helped the economics. With this approach, there are so many opportunities and products going out that help balance the costs”.

New US guidelines reduce pork cooking temperature

Recently-released cooking guidelines from USDA's Food Safety Inspection Service has confirmed National Pork Checkoff-funded research that shows pork can be consumed safely when cooked to an internal temperature of 145° F, followed by a three-minute rest time. The new recommended temperature is a significant 15 degrees less than the previous recommendation, and it typically will yield a finished product that is pinker in colour than most home cooks are accustomed to.



New USDA recommendations for cooking pork mean that it can be cooked medium-rare

The revised recommendation applies to pork whole-muscle cuts, such as loin, chops and roasts. Ground pork, like all ground meat, should be cooked to 160° F, says the guidelines. Regardless of cut or cooking method, both USDA and NPB recommend using a digital cooking thermometer to ensure an accurate final temperature.

“Pork can be consumed safely when cooked to an internal temperature of 145° F”

A risk assessment found that cooking pork to an internal temperature of 145° F was equivalent to cooking pork to 160°. NPB research conducted by Texas A&M University supports the fact that meat temperature continues to rise after being removed from the heat and the reality that “resting time” between cooking and eating is at least that long. Therefore, FSIS agreed that the cooking temperature for pork could be lowered.

“It’s great news that home cooks can now feel confident to enjoy medium-rare pork, like they do with other meats,” comments Guy Fieri, a chef, restaurateur and host of several food-focused television programs. “Pork cooked to this temperature will be juicy and tender. The foodservice industry has been following this pork cooking standard for nearly 10 years.”

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Australia's Pork CRC to enter new 'green' era

Over the last six years Australia's Pork Cooperative Research Centre has focused its work on becoming internationally competitive in terms of production efficiency and costs. It is now about to launch a new research program that is oriented more towards the consumer and the environment, called CRC for High Integrity Australian Pork.

"I know from my travels that Australia's pork industry is now much better positioned globally than it was six years ago," says Dr Roger Campbell, CEO of Pork CRC. "There is no doubt that we will continue to face pressure from exporting countries to allow the entry of more pork and different forms of pork into Australia." However, he believes the country is making significant progress with retailers and consumers regarding the uniqueness and value of Australian grown pork. The CRC for HIAP is all about further differentiating Australian pork on health, environmental and welfare grounds, Dr Campbell explains.

"The gap between us and other pork producing countries will be too big to jump"

The four key areas of research will be:

1. Confinement-free sow and piglet management, which will reduce and ultimately eliminate the need for, sow confinement during farrowing, lactation and gestation by developing innovative housing, mating and suckling systems.
2. Next-generation health management and antibiotic reduction, which will involve new and novel diagnostic tools to monitor enteric and respiratory pathogen loads in production units and better definition and understanding of the virulence genes which cause disease. The target is to reduce antibiotic use by 50 per cent.
3. Healthy pork consumption, which will involve innovative research to develop quality assessment and assurance tools for pork for domestic and overseas markets and an understanding of key Asian markets and how the High Integrity Australian Pork concept fits within these markets.
4. Carbon-conscious nutrient inputs and outputs will involve developing commercially viable feeding and effluent management systems for pig production that significantly reduce the net carbon footprint while maintaining production efficiency. The target is to reduce Carbon output to 1.0 kg/kg carcass produced.

Dr Campbell believes that the research program will help to successfully differentiate Australian pork from imported product. "Hopefully, this evolution will be to the point that the gap between us and other pork producing countries will be too big to jump, or there'll simply be no reason to think of sourcing pork from overseas," he says. "That is the vision and the CRC for HIAP and APL (producer body Australian Pork Ltd.) will concentrate their efforts to ensure it is achieved." ■

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View from Europe

Doing a farm trial - thoughts from the sharp end

By John Gadd

In the winter issue of WHJ, Lee Whittington wrote an excellent summary "Setting up an effective farm trial". I would like to support his sensible remarks and venture to add a few points of my own in a couple of articles. My involvement in farm trials started 40 years ago when in my on-farm advisory work I needed evidence, which for a variety of understandable reasons, were not in the literature. After some time and trouble I ventured to publish our findings and quite rightly was taken to task by two academics. They said statistically the results meant very little and if I would like to come up and see them, they would tell me why and put me straight. So I took them up on their very kind offer.

Academics don't like farm trials

This is perfectly normal and understandable because so many farmers – not just pig farmers – do not set up the trial properly. Furthermore if a farm trial does reveal apparent differences and/or if the trial **has** been designed properly but the results have not been analyzed statistically, this gets really up the academics' noses, who take great trouble to do both in their research trials.

Conscientious farmers get upset when they have to be told that the result – positive or negative – and the conclusion they have drawn from it, is of little or no value. Nobody likes to do all that hard work to be told that it was always going to be a waste of time and effort. They say "But why didn't someone tell me?" Which is the point of Lee's and my articles.

Many trials are not designed properly in the first place. Guided by statisticians I provide below a suggested method

of how this can be done, both to satisfy the farmer's own aims and those of the statistician. In my experience most farmers carry out the trial work on the farm diligently, which is excellent, but come crashing down in not getting the results analyzed. How to get this done and the likely costs and paybacks are given in my next article.

A practical method of arranging a farm trial which means something

I have been involved with over 60 trials in the following way and about 40 others which were abandoned at the planning stage.

1. What will make you change?

Decide on a profit figure. Taking a feed trial as an example, margin over feed cost, gross margin per pig sold or per pig

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place or quantity of saleable meat sold per tonne of feed (feed is your highest cost factor) or output per sow housed etc.,etc. It is your decision - you know your business best. So what will make you change in any one of these options should they appear positive?

One kilo more of meat produced per tonne of feed used - not worth changing. Ten kg/tonne of feed? Maybe, but hardly. OK then, 25kg? That's more like it, as at roughly five pigs to the tonne of feed this is 5 kg more lean sold per pig. Worth having, you say, for the same cost input. "Yes, that would make me change."

2. Being confident of the result

Good, now let us design a trial so that if there is a 25 kg difference (or very near it) in saleable meat per tonne of feed eaten between your present feed and the new alternative you are being asked to buy, then the trial will reveal it. This is called a 'confidence threshold'.

3. Finding out what you need to do

You need help with this. We now have to submit our needs to somebody trained in statistics, a research scientist or a university dept. You are fortunate in your part of the world - you have such paragons quite close to you! They will say that to achieve that degree of difference (if it exists) say 16, 17 or even 18 times out of 20 (10 times out of 20 is barely worth the trouble) you are going to need 'x' number of pigs on feed A, and 'y' number of pigs on feed B.

Sometimes - in my experience rather often as it happens - the farmer's face pales as he is told how many groups of pigs (called replicates) are required to satisfy his 'make me change' figure. This could well be quite impractical on his farm. Don't panic!

4. Adjusting your profit threshold to suit your capabilities

The statistician will discuss with you how to lower the target differences you have chosen so as to reduce the number of pigs and groups which you can handle. He may lower the confidence limit a bit if this helps, but still expose the "make me change" difference you have chosen - again if it exists between the two feeds. You can also explore with him how much of a difference lowering the "make me change" figure might make.

But sometimes the two don't meet. The scientist insists on too many pigs and the farmer won't change from what he considers to be too small a profit difference. If you cannot agree, then call it off.

5. Not to do so risks wasting everybody's time

Because so few farm trials follow this essential discipline (and a very hard one it is) many farm trials cannot be worthwhile. They end up being a waste of time - as my early attempts were. Worse, wrong conclusions can be drawn from the results which can be misleading where investment is involved; this is noticeable in the housing and equipment field. No wonder the academics are cynical. You can decide

on this design basis whether to do a farm trial **which means something**. It may be good news or bad news, but you won't have wasted your time and money on the result.

6. Positive or negative - the results need statistical examination

How to get this done and what it seems to cost will be the subject of my next article. Having paid for this service out of my own pocket from time to time, I can speak with feeling!

Some sobering figures

Of the 60 or so farm trials providing a result I have been involved with over the years using this method of pre-planning design, about 30 others fell at one or the other design hurdles and were never started. Some 10 farmers went ahead anyway to their own or their feed supplier's design (which I thought could be questionable) but by this time I had politely withdrawn. Of the 60 which went on to be analyzed, only 17 passed the producer's "make me change" target, and in my opinion many of the 40 others had over-optimistic targets. So don't be greedy, as in present times even a minor statistically-valid profit likelihood is worth having! Overall, the balance between positive and negative results was about even. ■



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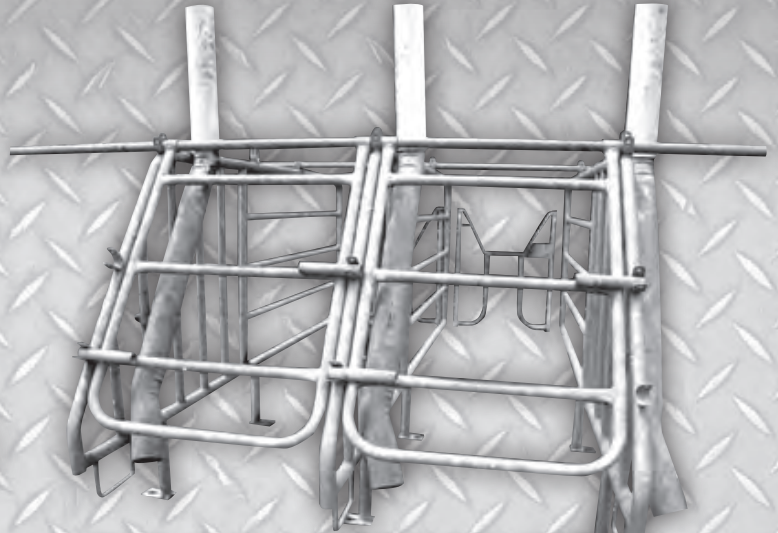
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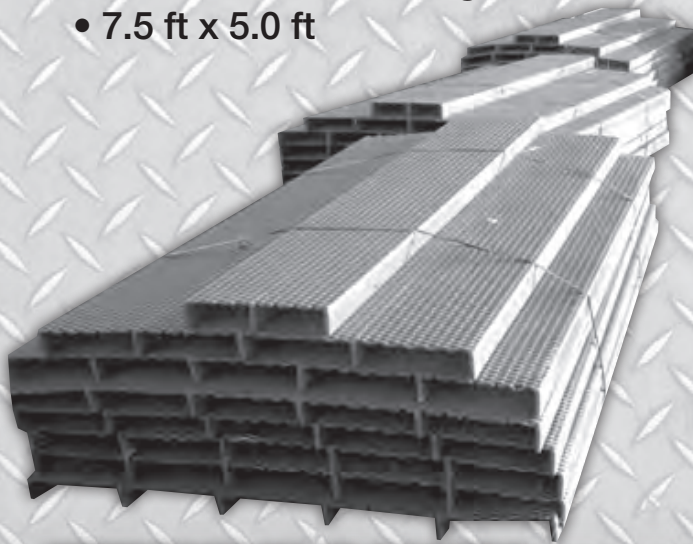
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Danes look to the future

By Stuart Lumb

Many pig producers in Europe cast envious eyes at Denmark, with regard to the ongoing research that is carried out there, which ultimately trickles down to farm level. Given the large contribution that pigmeat and breeding pigs make to Denmark's balance of payments it makes a lot of sense for this research to be ongoing. A detailed annual research bulletin is published, not only in Danish but also in English. Then each autumn literally the whole of the Danish pig industry meets to hear the latest research findings and to keep up to speed with anything related to pig production – all in all, a highly invaluable talking shop. Two researchers did some crystal ball gazing and presented a paper on future Danish production systems stating that production systems of the future had to be robust, in terms of health and labour, more productive and, because of the scarcity and very high costs of labour, make use of technology as much as possible.

Herd size

Today the average herd size is 580 sows, with few herds exceeding 2000 sows. In the future (next 10-25 years) many herds will have 2000-5000 sows and large finisher units will have 7000-10000 pig places. Smaller units will contain 2000-3000 pig places with one manager looking after several units and joint purchasing of feed would be the norm.

There will be no limit on herd size and units might be purely pigs and not have any land attached, although not surprisingly sites will be hard to find. Ammonia and odour reduction will be minimized using the latest technology.

Welfare

All sows and gilts will be loose housed. Castration will be banned and all production will be from entire males. Shoulder lesions and leg problems will be things of the past and much attention will be paid to tail docking and reducing mortality.

Feeding

Dry feeding systems will be promoted for lactating sows. The authors consider that weaner productivity will be maximized with liquid feed and that wet feeding for finishers will only be viable if the equipment costs can be covered by increased performance or reduced feed costs. On farm mixing will be popular with buying in feed from local mills as another option.

Health – sows and gilts

The focus will be on keeping high levels of immunity, with purchased gilt replacements being quarantined for 8-12 weeks.

Cross-fostering to even up litters to take place as soon as possible, after adequate colostrum intake. Any variations in production can be evened out through weaning more than once per week, if considered necessary.

Health – grower finisher pigs

Streaming of “non mainstream pigs” (5-10% of production) will be carried out, accommodated in appropriate housing.

Human resource management and work planning

Herds will be not be owned by the herd manager. Qualifications will be important and in-work training will be ongoing, making use of farm demonstrations. One or two students will be allocated to section managers and “shadow” them during the working day.

Buildings and unit layout

Traditionally, units have just grown, somewhat haphazardly. In the future, the layout should be flexible enough to

CONTINUED ON PAGE 68

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The majority of Danish farms use group sow housing such as this electronic feeding system

allow for expansion, for example to double up the unit given a favourable economic climate. There are various configurations, one being a central access passage running the full length of the unit with buildings on either side, in a logical sequence. The barns housing gilts and dry sows come first, then farrowing barns followed by weaners. The American model, in this case for 6000 sows, has each barn side by side, parallel to one another, with a connecting passage giving access from one section to the next.

Building costs

In terms of building costs per sq. metre, the wider the barn the cheaper the cost / sq. metre and correspondingly the longer the barn the cheaper the cost / sq. metre, although there is only a relatively small reduction from a 120m long barn to one that's 220m in length in terms of building costs / sq. metre.

Sections

The sub-dividing of barns will depend on the size of the unit and how many sows are weaned and how often. An example was given, of a 4400 sow unit. If a once-weekly system was adopted, then 200 litters would be weaned, weaning twice per week, 100 litters, or weaning 4 times a week, 50 litters.

Possible management systems

Three different management systems were evaluated, with full costings, to show the relative profitability of the three options.

These were :

1. Traditional
2. F-18
3. Loose Farrowing

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1. Traditional

In this case sows are housed in free access stalls, with sows farrowing in conventional crates. Weaner housing takes the pigs from 7-30kg with 33pigs per pen. At 30kg pigs are shipped to a finisher site.

"Danish welfare groups are pushing strongly to have farrowing crates banned completely"

2. F-18

Again, dry sows are housed in free access stalls. However the farrowing pen also doubles up as kennelled weaner accommodation taking each litter up to 18kg (this system has been used in the Netherlands and is also used in Italy). Then pigs are shipped to a grower finisher facility.

3. Loose farrowing

With this option, dry sows are all kept in an ESF system. Sows are farrowed loose in crateless pens. (Danish welfare groups are pushing strongly to have farrowing crates banned completely.) At weaning two litters are mixed and again kept in kennelled weaner pens up to 30kg.

In the modelling, Top 25% Danish producer data was used, namely:

30.4 pigs weaned / sow / yr
Weaner ADG = 495gms
Finisher ADG = 968gms

The model is based on 1000-sow units

It has been also assumed that pre-weaning mortality would be 5% higher in #3 vs #1 and #2, although piglets in #3 would wean 1kg heavier than weaners in #1 & #2.

The researchers included all capital costs, along with fixed and variable costs as well and calculated the cost of producing a pig:

Traditional = 9.52 Dkr/kg (\$1.79)
F-18 = 9.26 Dkr/kg (\$1.74)
Loose = 10.21 Dkr/kg (\$1.92)

They concluded that the "same pen farrow to wean" concept can compete with traditional production, but that it is more expensive to produce pigs from a completely loose farrowing system due to the higher mortality and also higher labour costs with that system.

In conclusion the authors stated that in future:

1. Herd ownership and management might be split
2. Building units with "same pen farrow to wean pens" (F-18) is a cost effective option to be considered.
3. Large units should consider different weaning options i.e. more than the traditional once / week concept. ■

This article was based on a paper presented at the annual Danish Pig Congress, October 2010 by Project Chief Soren Jacobsen, Danish Farm Design A/S & Project Chief Torben Jensen, Danish Agriculture and Food Council



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Alberta Swine Genetics	24	Landmark Feeds	27/35
Alltech	36	Robb Lepp	66
Banff Pork Seminar	58/64	Longarm	16
Barkman	65	Magnum Swine Genetics	43/45/47
Bayer Animal Health	21	Masterfeeds	39
Biovator/Nioex Systems Inc.	33	Maximum Swine Marketing	40
Canadian Centre for Swine Improvement.....	38	Merial Canada Inc.	25
Canada Farm Distributors	30	Nuhn Industries.....	70
Canadian Bio-Systems	53	Parks Livestock.....	8
Canadian Nurs-ette Distributors	51	Parkview Pre-cast	18
Canarm BSM.....	22	Peak Swine Genetics.....	54
Carlo Genetics	29	Pfizer Animal Health.....	13
Champion Alstoe.....	62	PIC.....	7
Crystal Spring Hog Equipment.....	34	PigWIN	20
Danisco.....	14	Pork Chain Consulting	30
DPI Global/MICRO-AID.....	67	Prairie Swine Centre.....	26/48
Echberg Distribution.....	61	Pro-Ag Products.....	6/19/41
Elanco.....	5	Protekta Inc.	52
Envirotech AG Systems Ltd.	69	Ralco Nutrition.....	59
Fast Genetics.....	17	Red Deer Swine Technology Workshop	60
GEA Farm Equipment.....	37	Sand Ridge Farm Ltd.	52
Gencor IMV	70	Shac Environmental Products Inc.	48
Genesis	2/72	Sierens Equipment Ltd.	46
Glass-Pac.....	12	SIGA Farm Software.....	15
Grand Valley Fortifiers.....	63	Signature Genes	51
Halchemix Canada Inc.	4	Standard Nutrition.....	32
Husky Farm Equipment.....	49	Sun-North Systems.....	28
Hypor Swine Group	11	Super Sorter / Baer Mfg	42
Intervet Canada Corp.....	71	SwineBooks.....	62
ITSI.....	50	Topigs	23
J&R Livestock Consultants.....	56	Vétoquinol	9/31/57
John Guliker	68	Western Hog Journal	50/58
Kane Manufacturing.....	55		

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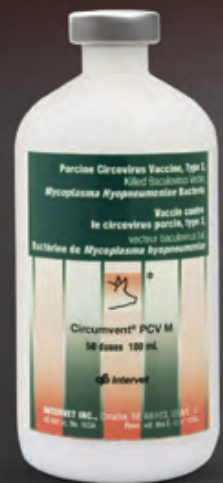
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