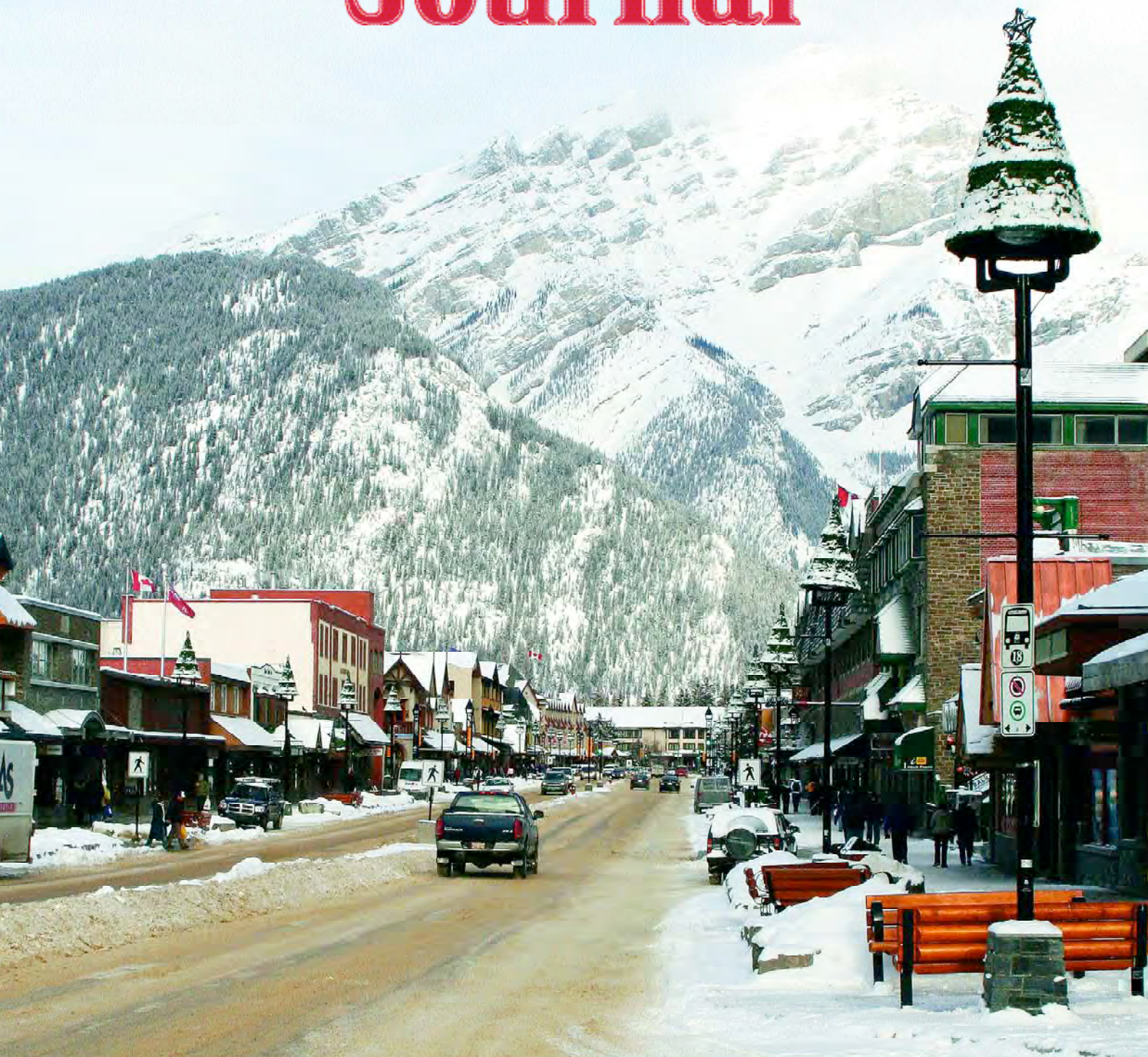
Canadian Publication Mail No. 40062769

SPECIAL EDITION

Western Hog Journal



BANFF PORK SEMINAR 2008

Western Hog Journal

Volume 29, Number 4 **BANFF PORK SEMINAR 2008** Date of Issue: March 2008

PREFACE

Against the background of a Canadian pork industry in crisis, the 2008 Banff Pork Seminar attracted an attendance of well over 700, emphasizing its position as one of the premier educational events in North America. The organizers once again put on a world-class seminar with outstanding speakers and timely and relevant topics.

The session content reflected the challenges faced by producers currently and also helped to put some of them in perspective. For example, the informative and amusing double act of Steve Meyer and Kevin Greer not only dealt with COOL legislation but also provided a detailed review of the North American industry. The revised Friday plenary session focused on "Surviving the cost-price squeeze" and compared the relative costs and efficiencies in the Canadian and US industries, examined the state of the processing industry and concluded with a heartfelt plea from CPC president Clare Schlegel - "Our producers must survive!" The technical topics included presentations on reducing feed costs, biogas, PRRS eradication, employment of foreign workers, group sow housing and management of prolific sows.

The summaries of papers given at Banff presented in this special issue of Western Hog Journal are intended to bring you as much of the information as possible. However, the original papers are available in the proceedings, Advances in Pork Production, Volume 19. To order a copy, contact the Banff Seminar office at 4-10 Ag/Forestry Building, University of Alberta, Edmonton, AB T6G 2P5, telephone 780-492-3651, fax 780-492-9130 or e-mail info@banffpork.ca.

I would like to acknowledge and thank those people that have helped me with summarizing the presentations for this issue: Cara Dary and Jodi Hesse of Alberta Pork and Cathy Peet of Pork Chain Consulting. Also, thanks to Terry Hockaday and his team at Meristem Land and Science for assistance with editorial and photographs.

Bernie Peet

COVER PHOTO

The town of Banff, Alberta – venue for the Pork Seminar.

Published quarterly by Alberta Pork with cooperation from the British Columbia Hog Marketing Commission, Sask Pork and Manitoba Pork Council

SUBSCRIPTIONS:
For new subscriptions, change of address or other subscription queries, please contact Charlotte Shipp at Alberta Pork, phone (780) 491-3525, fax (780) 479-5128 or email charlotte.shipp@albertapork.com

Publications Mail Agreement No. 40062769
Return Undeliverable Canadian Addresses to Circulation Dept.
4828-89th Street
Edmonton, Alberta T6E 5K1

PUBLISHER
Paul Hodgman

BUSINESS MANAGER & EDITORIAL DIRECTOR
Bernie Peet
Phone: (403) 782-3776
Fax: (403) 782-4161
email: whj@albertapork.com

ADVERTISING:
James Shaw
1 Burnhamthorpe Park Blvd.
Islington, Ontario
Canada M9A 1H8
Phone: (416) 231-1812
Fax: (416) 233-4858
email: jamesshaw@rogers.com

Chairman's Message

I think people enjoyed their experience at the 2008 Banff Pork Seminar. The attendance, with the number of tough challenges facing the Canadian pork industry, was very positive. As well, the geographical diversity of the attendees this year is a testament to the growing reputation of the conference; delegates came from both Eastern and Western Canada, the United States, Europe, South America and Australia to the 2008 conference. There were producers, lenders, suppliers and policy makers, and they came from all over the world. I believe that the topics were of genuine interest to the attendees, as gauged by some of the discussions in the hallways.

People had very serious discussions this year. In particular, I think the discussion on the future of the Canadian industry was a robust discussion that all those who attended gained from.

Ron and Ruth Ball did a first-rate job, as usual, in orchestrating and doing the "behind the scenes" work for the event. The location was great as well. It is very hard to beat Banff, Alberta as the site for a venue during ski season!

I hope that we can put together an even better event for 2009, and I look forward to seeing everyone at the 2009 Pork Seminar to discuss what will inevitably be a very interesting year for the Canadian pork industry in 2008.

Best Regards
Daryl Possberg
Chairman, BPS Organizing Committee

Details land Bartside Farms the PIC Camden Cup

PIC Canada has awarded the 2007 Camden Cup to Wayne Bartels and family of Bartside Farms, located in Binbrook, Ontario. Bartside Farms is a 600-sow, farrow-to-finish operation owned and operated by Wayne Bartels; Wayne's brother, Geoff; his father, Henry and mother, Nancy.

"Bartside Farms is an excellent example of whole system economics," said Chris Steiner, General Manager of PIC Canada. "The operation has excellent production results, weaning over 30 pigs per sow per year, and has excellent management practices in place."

"What amazed me the most about climbing to this level of production, was how simple it was," said Wayne Bartels. "It was just a matter of taking care of the details; dotting the I's and crossing the T's. It might sound simple, but I have noticed that for farmers or for any business for that matter, knowing what to do and getting it done are two different things."

Presentation of the PIC Camden Cup award. Pictured (L to R) Ian Ross, Grand Valley Fortifiers; Heather Heastont, Farrowing Technician, Bartside Farms; Duane Firminger, Grand Valley Fortifiers; Wayne Bartels, Owner, Bartside Farms; Rebecca Stadder, Farrowing Technician, Bartside Farms; Andrew Jackson, PIC Sales Director, Eastern Canada and Egidijus Mickevicius, Production Services, Eastern Canada.

Wayne describes himself as an "ex-dairy guy," having spent 13 years in the dairy industry before moving over to pork production. When Bartside Farms made the jump to swine production they knew they needed the right tools to reach the same top performance they had with dairy. "We knew we had to surround ourselves with the best of everything. The best barns, the best pigs, the best advisors, and the best employees," Wayne states. "We sat down with several genetic companies and spoke with other farmers before making our decision on genetics. At the end of our deliberations it was clear, PIC genetics had the most to offer."

Although the Bartels family has only been involved in the pork industry for a short time, they have achieved great success due to their "details matter" approach. "Attention to detail is the key to managing an operation for top performance," states Wayne.

The Camden Cup award program began in 2004 and is awarded annually to the PIC full program herd that exhibits efficient production of high volumes of quality pork. Entries are benchmarked on pigs weaned per mated female per year and are verified by PigChamp.

As the recipients of the Camden Cup Award, Bartside Farm will receive credit towards breeding stock in the coming year and an all expenses paid trip for two to the Banff Pork Seminar.

For rules and requirements or to submit an application, please contact your local representative or call PIC at 1-800-661-1543.

Key performance figures

Pigs total born/litter	14.1
Pigs weaned/litter	11.9
Farrowing rate (%)	92.9
Litters/sow/year	2.56
Pigs weaned/sow/year	30.5

Alberta pork industry leaders recognized at Spectra Awards

Two leaders of Alberta's pork industry were recognized for leadership and excellence at the annual Alberta Pork Spectra Awards. The awards were presented as part of the Alberta Pork Annual General Meeting held in December.

The awards are divided into two categories. The Lifetime Achievement Spectra Award honours those with 25 or more years of service in the pork industry, either as a producer or in another capacity. The Friend of the Industry Spectra Award is presented to a non-producer whose work has had a positive effect on the industry.

Former Alberta Pork general manager Ed Schultz received the Lifetime Achievement Spectra Award. Over his 35-year history with Alberta Pork, 33 served as general manager of the organization, Schultz played a lead role in the promotion and marketing of Alberta pork both at home and around the world, serving on many committees and organizations in the Alberta and Canadian agricultural industry.

Schultz's dedication to the pork industry has led to many awards, including the Growing Alberta Innovation Award in

continued on page 10

Ed Schultz (right), winner of the Lifetime Achievement Spectra Award, with his wife Judy and Paul Hodgman, Executive Director of Alberta Pork. (photo courtesy of Meristem Information Resources)

1998 for his role in developing the Alberta Quality Pork program. He received the Alberta Pork Industry Leadership Award in 2003 and was recently recognized as one Alberta's 50 most influential people by Alberta Venture magazine.

Alfred Wahl, general manager of Peak Swine Genetics Inc. in Leduc, received the Friend of the Industry Spectra Award. Over the past 10 years, Wahl has helped build Peak Swine Genetics into a popular supplier of genetics to producers in the western provinces and the Pacific Northwest U.S..

Alfred Wahl, winner of the Friend of the Industry Spectra Award (photo courtesy of Meristem Information Resources)

Exports of pigs sourced by Peak Swine Genetics have been sent to China, Vietnam and Chile.

Wahl's three-decade career in livestock technology has included several positions in both the private and public sectors as well as lead roles in the advancement of swine genetic research. As project director of the Western Swine Testing Association, he saw three swine genetics research projects receive provincial funding.

Fast Genetics completes largest live pig genetics export to China

Saskatoon-based Fast Genetics, a wholly owned subsidiary of Hytek Ltd., has completed the largest live pig genetics export to China, sending 866 great-grand parent Landrace, Large White and Duroc animals from its nucleus farms in Northern Saskatchewan. The pigs made the flight from Chicago to Chengdu, China aboard a Boeing 747, where 26 Chinese military

The shipment of pigs from Fast Genetics arrives in China

continued on page 12

trucks awaited their arrival and then transported them off to their new home near Nanchong. The pigs were sold to Tianzow Foods, based in Chongqing, China, to populate a new nucleus facility for eventual distribution as part of Tianzow Food's rights to distribute Fast Genetics in China.

Hytek Ltd., based in La Broquerie, Manitoba, has a significant equity interest in Tianzow Foods, which owns pork production facilities, slaughtering and processing plants, as well as a chain of retail meat stores in China, the largest pork producing country in the world. The strategic vision of the company is to supply safe and consistent pork to the largest market in the world. This export of nucleus animals by Hytek's subsidiary, Fast Genetics, completes the vertical integration of Tianzow Foods in China.

Sows on straw show greater longevity

Adapted from Farmscape

Research at the University of Manitoba's National Centre for Livestock and the Environment shows the longevity of sows housed on straw tends to be better than that of sows housed on partially slatted concrete floors. Scientists are comparing conventional partially slatted concrete floors with an alternative straw based system, looking at animal behaviour, health and production performance.

Department of Animal Science head, Dr. Laurie Connor, reports that culling rates in the group housed on concrete have been about ten percent higher than in the group housed on straw. She says that performance of sows on the two flooring types is similar but that the higher culling rate on part slatted flooring is associated with foot, leg and joint problems.

"There's no cushioning like there is on straw and also, when the sows are grouped together, those that are on the concrete type of floor, if they're going to scrap a bit, there's more opportunity for them to hurt themselves," Connor explains. "In the alternative barn when those sows are mixed together they tend to very rarely fight. They do spend a lot of time just chewing on straw and checking out the environment."

Export success in Chile and China

Edmonton based Polar Genetics Group has announced the establishment of genetic nucleus herds in Chile and China following exports of breeding pigs last year.

An initial shipment of 275 GP Yorkshire, Landrace and Duroc gilts and 16 GP Yorkshire, Landrace and Duroc Boars was delivered from Canada to Chile by air in March 2007 for the multiplication of F1 parent gilts and Duroc terminal boars in order to supply high health replacement stock for both the development of an integrated commercial hog productionsystem in Chile as well as to pig producers in Chile, Argentina and Peru.

The first litters were born in October 2007. In order to further grow and develop the system, subsequent shipments of GP stock are planned in the future. In addition, the eventual inclusion of a GGP nucleus and central AI stud with the capacity to support the entire breeding and commercial pyramid is envisaged.

A new joint venture company in China will breed both GP gilts and boars for the development of an integrated multiplication network that will produce and supply F1 parent gilts and terminal boars to producers. The nucleus herd will also breed boars in order to supply a network of AI centres that will be developed to provide both terminal and maternal line semen for sale.

An initial shipment of 628 head including 542 GGP purebred gilts, 26 GGP purebred boars and 60 AI boars successfully arrived by air in October 2007. The breeding program will be linked directly to the Canadian Centre for Swine Improvement in order to achieve maximum genetic selection and improvement within the nucleus herd.

Genetiporc announces addition to western Canada team

Genetiporc has announced the appointment of a new sales representative in western Canada, Mr Jim Lewis. Mr Lewis has

continued on page 14

worked in the swine industry since 25 years, mainly in farm equipment and took up his new position in December.

He brings with him a very good understanding and valuable experience of the swine industry business. Since November, Mr Lewis will work in collaboration with Barry Jensen, in order to develop the sales of breeding stock in Alberta, Saskatchewan and Manitoba markets.

Jim Lewis, Genetiporc's new sales representative in western Canada

Mr Lewis joins a dynamic and experienced sales team under the direction of Mr Germain Camire. Mr Camire is supported by Nadine Mulder, sales associate. Genetiporc's team wishes Mr Lewis a lot of success in his new functions.

2008 Swine Breeding Management Workshop

The 2008 Swine Breeding Management Workshop will be held on Thursday, April 24 and Friday, April 25, 2008 in the JG O'Donoghue Building in Edmonton. Entitled "Setting up the Herd", the workshop covers a wide range of topics relating to herd management: nutrition of the replacement female, gilt development unit systems, boar exposure area management, management of the replacement gilt and the weaned sow, measurements of lifetime performance and batch farrowing systems. In addition, a series of technical sessions, both barn and laboratory based, will include topics such as boar exposure area management, sperm and embryo assessment, assessment of ovarian activity using ultrasound, and litter development in utero.

For more information contact Sue Charlton on (780) 237-1033, by fax to (780) 492-6990, or by emailing susan.charlton@ualberta.ca. A registration form can be found at www.afns.ualberta.ca/Hosted/SBMW/. The cost of the workshop is $250, which includes refreshments, breakfast, lunches, evening reception and a copy of the proceedings.

Alberta Pork Spectra Award Friend of the Industry presented to Alfred Wahl

Friend of the Industry award presented during the Alberta Pork AGM in December 2007. Pictured above Penny Jones, Herman Simons, chairman of Alberta Pork and recipient Alfred Wahl.

Hytek to modernize Springhill hog plant

Adapted from Farmscape

Hytek Limited has started a two year project to upgrade and modernize its Springhill Farms hog slaughtering plant at Neepawa, Manitoba to accommodate expanded value-added processing.

Last October Hytek, Canada's largest privately owned pork production company, announced its purchase of the Springhill Farms hog slaughtering plant at Neepawa.

Guy Baudry, the CEO of Springhill Farms and Vice President of Hytek says the upgrades will not only secure the long-term future of the plant and its current 350 employees but also create 200 new jobs. He says that, in the future, the facility will process approximately 1.4 million hogs per year.

Baudry notes Springhill Farms has been working with a diversified portfolio of suppliers and Hytek intends to continue those relationships. He says the big focus will be to increase the facility's capacity so, in turn, Hytek will also be able to accommodate more of its own hogs. WHJ

• FX Aherne Prize Winners

Several innovators in the Canadian pork industry were honoured for their contributions to pork production at the 2008 Banff Pork Seminar. The winners of this year's F.X. Aherne Prize for Innovative Pork Production include Willie Hoffman of Prairie Orchard Farms in Winnipeg, Manitoba; Dave Ross and Shane Sigurdson of Paragon Pork in Lacombe, Alberta; and Phil Beaulac of Fast Genetics in Spiritwood, Saskatchewan.

F.X. Aherne award winners, left to right: Eduardo Beltranena, Alberta Agriculture and Food, committee chair; Phil Beaulac, Fast Genetics, Spiritwood, Sask.; Dave Ross and Shane Sigurdson, Paragon Pork, Lacombe, Alta.; and Willie Hoffman, Prairie Orchard Farms Winnipeg, Man.

"With the many challenges the Canadian pork industry faces today, it has never been more important to develop practical innovations that producers can use to help themselves become more profitable and globally competitive on their operations," says Dr. Eduardo Beltranena of Alberta Agriculture and Food, chair of the F.X. Aherne prize committee.

"The F.X. Aherne Prize for Innovative Pork Production is an opportunity for the industry to recognize those individuals who have developed either original solutions to pork production challenges or creative uses of known technology."

The awards are named after the late Dr. Frank Aherne, a professor of swine nutrition and production at the University of Alberta in Edmonton and a driving force in the western Canadian pork industry. "Frank was responsible for several innovations that the pork industry still benefits from today. These awards honour his memory while recognizing those who continue to make contributions to the pork production industry."

Willie Hoffman, a leading innovator in the field of value-added pork products, was recognized for his development of Omega-3 Enhanced Pork. Food enriched with this favourable form of fat has been attributed with cardiovascular benefits, cancer prevention properties and human mental health benefits. The product has also been recognized by head restaurant chefs for its superb taste qualities.

"Omega-3 Enhanced Pork is an example of a pork producer responding to greater health awareness among consumers today. It meets a need in the marketplace that helps increase pork's profile as a healthy, good-tasting source of meat protein," says Beltranena.

Omega-3 enhanced pork won an FX Aherne Prize

Dave Ross and Shane Sigurdson received the award for the development of a sow shoulder pad. This simple vinyl and foam pad device helps prevent sows from developing shoulder sores while laying on their sides for long periods of time nursing piglets.

"The sow shoulder pad is an ingenious way of promoting comfort for the animal," says Beltranena. "From a production perspective, the shoulder pad reduces the need to wean affected sows early. The lack of shoulder sores also increases the value of sows considerably."

Phil Beaulac received an F.X. Aherne Prize for his development of a wall-mounted geared box system to open breeding stock tube feeders at once. The geared box replaces the traditional cable on a roll-up crank that over time would fray, resulting in maintenance issues and eventually a danger to staff. The gear system turns a horizontal bar above the tube feeders ensuring the cable is wound straight up onto the bar instead of to the side as with the traditional crank cable system.

"This innovation reduces cable repairs, maintenance and feeder replacement costs, helping drive profitability in the process," says Beltranena. "The system has been recognized by Fast Genetics staff as a quick and efficient way for both experienced and inexperienced staff members to drop feed into rows of feeders at a boar stud."

• New Product Showcase

Pulmotil® Premix approved in Canada for Glasser's disease

Pulmotil Premix from Elanco Animal Health has received approval in Canada as the first in-feed solution to Glasser's disease.

"Glasser's disease poses a serious threat, and by providing solutions such as Pulmotil Premix, Elanco can help Canadian hog producers compete in the world marketplace," says Dr. Marie Anne Paradis, a Senior Research and Development Scientist with Elanco. "This approval in Canada - the first for this disease - is a demonstration of Elanco's commitment to innovation."

Elanco received Canadian regulatory approval Oct. 2, 2007, for the sale of Pulmotil Premix as an aid in reducing the severity of Glasser's disease (porcine polyserositis and arthritis associated with Haemophilus parasuis) when fed to pigs approximately 7 days prior to an anticipated outbreak. Mixing and feeding instructions are on the label. (Mix at 2kg/tonne to provide 400 ppm tilmicosin activity per tonne in complete feed.) Producers should note that the label has been revised, including a withdrawal time change to 14 days, and they should always strictly follow label directions.

Elanco recommends feeding Pulmotil the first 3 weeks after weaning. This protocol can help an animal make a strong start, which in turn can help producers yield more Full Value Pigs™. Producers also benefit from the convenience of a feed-based regimen.

Pulmotil is available wherever producers currently purchase their in-feed medications. "Recent price reductions have made the payback even more appealing," says Colin Hatch, Elanco Senior Swine Marketing Associate. "Investing in pigs as early as possible sets them up for success and maximizes their potential as Full Value Pigs."

Pulmotil Premix is also approved as an aid to reduce the severity of swine respiratory disease associated with Actinobacillus pleuropneumoniae and Pasteurella multocida.

New intra-uterine catheter introduced

Absolute Swine Insemination Co., LLC (ASIC), has introduced a new range of intra-uterine catheters, the Absolute AMG™ Series. AMG™ is an acronym for Absolute Mega Generation and is the most advanced product to-date utilizing ASIC's patented membrane (balloon) technology, says the company.

The Absolute AMG™ Series is a one-piece tubular pipette that comes with a universal adapter fitting all types of semen containers. "AI technicians will immediately see an improved, leak proof fit; regardless of whether they use bottles, tubes, flat-packs with spouts or even flat-packs with no spout at all," says ASIC. The universal adapter is easily removable and its protective cap will fit into either end (depending on use) to prevent undesirables from entering the interior of the catheter once inserted into your animals.

Special bottles, tubes, and flat packs specifically designed for the AMG™ Series will be available in time for review at the World Pork Expo in June.

Correction – Protekta Inc.

In the last issue of WHJ, we gave the wrong phone number for Morten Jacobsen at Protekta Inc., supplier of FerkoFer oral iron supplement. The correct number is (519) 528-5888. You can also contact Morten by email at protekta@protekta.ca

Federal help falls short of expectations

Adapted from Farmscape

Canadian swine producers are calling for further adjustments to Canada's agricultural safety net programs after the latest efforts by the federal government to deliver help fell far short of expectations.

Last November livestock producers appealed to the federal and provincial governments for a loan program to help them cover costs and pay bills until markets turn around and for changes to the Canadian Agricultural Income Stabilization program (CAIS) to make it more responsive to their needs.

Although Ottawa rejected the request for a federal loan program, changes were made to CAIS in an effort to get money into producers' hands more quickly.

AgriStability, a federal-provincial program launched for 2007, was designed as part of a new suite of Business Risk Management programs to replace CAIS. The new program was intended to include a more responsive inventory valuation, enhanced negative margin coverage, and a new Targeted Advance Payment (TAP). Under the Targeted Advance Payment producers were eligible to receive 60 percent of their 2007 CAIS payment up front. However, the actual amounts paid to producers have been described as "disappointing" by industry leaders.

When the program was originally considered in December, Saskatchewan pork producers expected to receive about 18 million dollars, says Saskatchewan Pork Development Board general manager Neil Ketilson. "In January, when the program was officially announced, there had apparently been an error within CAIS. When the numbers were re-jigged the estimate dropped to about $7 million for the industry and producers were told to expect letters indicating how much money they would receive."

When the letters began arriving, producers who had been told they would be receiving payments were informed there had been another error and payouts would be less than indicated. "Of the 116 producers that received letters in Saskatchewan 26 percent have found out they will be receiving zero and the majority significantly less than was originally planned for," says Ketilson. "It seems obvious to us that the CAIS program, the way it works in terms of its lags, in terms of payments, in terms of its total inability to meet the cash needs of the industry, isn't going to work for us," he concludes.

One bright light in Saskatchewan is the short-term hog loan being offered by the province. "We really appreciate the short term hog loan that the provincial government gave to us," says Ketilson. "It's a significant help to our producers. We understand from producers in the province that it is really the lifeline that has helped a lot of them through."

The loans comprise advances on verified sales of finished slaughter pigs or weaners from between 1 October 2007 and 2 May 2008. Rates paid for finishers will be based on 90% of the sum of CAN$140 minus the weekly average price per 100 kg for pigs with an index 108, while advances on weaner sales will be for CAN$10 per pig delivered in any week when the Saskatchewan market price is below CAN$140 per 100 kg.

Agriculture Minister Bob Bjornerud said the programs, for both pig and cattle farmers, are

continued on page 20

estimated to provide $90 million in support and will help producers through this current price downturn.

Manitoba Pork Council requested a similar program to help Manitoba producers weather the storm until live hog prices rebound.

Meanwhile, CPC continues to lobby the federal government for loan assistance, recently appealing to the Prime Minister for a short-term loan program. "The pork industry is committed to adapting to the reality of a strong Canadian dollar and high feed prices but cannot do so when the change has happened so rapidly," says the letter from CPC President Clare Schlegel. "This industry is world class and has the basic fundamentals to succeed in the future. However, our Canadian Government must also accept its responsibility of providing a stable business environment if it wants value-added businesses to continue adding to the balance of trade."

Pig numbers falling worldwide

Reports and data from around the world suggest that there is significant contraction in countries where feed and production costs are highest, especially in the EU. In Holland, the University of Wageningen has calculated the cost of market hog production at around $2.60/kg and cost of a feeder pig $80. The number of pigs being slaughtered appears to have been dropping quite sharply in certain countries, notably Germany, Denmark, Ireland and the UK, (see table), although it should be borne in mind that this data is only for a single month.

Slaughterings for November 2008 –v– November 2007 ('000 head)

	2007	2008	Diff. (%)
Germany (Oct)	4,502.4	3,817.1	- 15.2
Denmark	1,933.1	1,633.8	- 15.5
Ireland	230.8	200.4	- 13.2
France	2,102.0	2,082.8	- 1.0
United Kingdom	959.9	794.9	- 13.2
Belgium	965.7	901.7	- 6.6

Recently published census numbers confirm the decline:

Denmark: In the 12 months to January 2008, the breeding herd was down 5.2%, with total pig numbers down by a similar amount. However, there appears little evidence of further slippage in future, with numbers of gilts destined for breeding down by only 1.9%.

United Kingdom: Latest forecasts indicate that the UK pig breeding herd will fall by 12% between last year and June 2008. This will have an impact on the availability of finished pigs in the second half of this year and into 2009, says the Meat and Livestock Commission.

Even allowing for a further increase in productivity, average weekly pig slaughtering is forecast to fall from 185,000 a week in 2007 to 165,000 a week in 2009. However, MLC say that if pig prices rise in the next few months this will provide the confidence for many to remain in production and to seek to

cover their costs later in the year as the European pig price increases.

Poland: In December 2007, Poland had 17.6 million pigs, one million fewer than 12 months previously. While total pig numbers fell by 6%, sow numbers were reported to be 13% lower and the number of pigs slaughtered during the year is estimated to be 24 million, down 10%.

Australia: Australian press reports suggest that high numbers of pig farmers are deserting the industry, unable to compete against an increasing wave of cheaper imported pork.

During 2007 imports of processed products, such as bacon and ham, increased by 40 per cent and now account for 64 per cent of the whole processed pork market. Local producers are estimated to be losing around $50 per pig due to higher grain prices and competition from cheap imports.

Industry information service INFARMATION says that Australia's 300,000-head breeding sow herd has been slashed by 30,000 sows and a recent survey of pig farmers shows that 27 per cent were planning to quit production in the near future.

Danish Crown producers in revolt

Danish Crown has refused a call to increase producer prices by 40 percent in two months. It says the demand by the Danish Pig Producers Federation, which represents some of the largest producers in the country, is unrealistic in the current climate of oversupply and would hand market share to competitors.

Around 700 Danish Crown producers - including some of the country's largest pig farmers - are threatening to tear up their contracts with Danish Crown if the co-operative does not pay more for pigs.

Producers have also demanded a different corporate structure and a halt to any further takeovers. As a result of this revolt within its ranks, Danish Crown is in danger of losing around two million pigs a year.

"We can't survive with the prices we are receiving at the moment and we own the processing company, so we're now insisting that they take matters in hand and increase prices," said Torben Poulsen, chairman of the Danish Pig Producers Federation.

Who got the money, Brits ask

After campaigning for higher prices from retailers, British pork producers were dismayed to find that the average price paid for their pigs actually declined, while retail prices of pork had increased by 10% between August and the end of November last year. "Who got the money?" asks PigWorld, the country's leading magazine for pork producers.

Some of the country's major retailers responded to producer pleas for higher payments and these should have fed through to the Deadweight Average Pig Price (DAPP), says PigWorld. Retailers say they have already given increases of 7-10% and this should have reached producers. However, the market price for pigs has been dragged down by imports of cheaper pork from countries such as Denmark, Holland and Poland This situation has been made worse by the inability of the British pork sector to export product due to the recent outbreak of Foot and Mouth Disease. "There is a supply chain credibility gap," said producer organization the National Pig Association.

WHJ

Summarized by Bernie Peet

Soaring food demand, biofuels, organic farming and the new vision for agriculture

Dennis Avery

Over the next 50 years, the world's farmers will face their greatest conservation challenge in history – doubling food and feed production without clearing the rest of the planet's forests for low-yield crops and pasture. In addition, farmers are expected to produce billions of gallons of biofuels on their "spare" land. Finally, farmers are told they should produce this abundance organically, with half the yields per acre of conventional farming. Together, these are impossible demands based on a touching faith in the past successes of farm science and technology, says Dennis Avery of the Center for Global Food Issues, Churchville, Virginia.

Losing the gains from the Green Revolution?

The Green Revolution of the 1960s achieved a near-miraculous tripling of crop yields on much of the world's high-quality land, with its plant breeders leading the effort. Farm productivity has continued to increase significantly in the years since 1970. U.S. corn yields, for example, have increased from about 5 tons per hectare in the early 1970s to about 9 tons per hectare today. U.S. meat and milk production per hectare has doubled since 1970, thanks not only to higher crop yields but also to such advances as more complete feed rations and veterinary medications. Canada's productivity has certainly followed a similar upward path. In addition to saving a billion people from starvation, the Green Revolution produced a startling side effect: the end of the population explosion. Peasant farmers historically had large families as their only available "social security". The Green Revolution not only allowed a great deal more food to be produced on less land, but it released many rural workers to take ultimately higher-paying urban jobs.

Ecologist Michael Huston has said that all over the world the best farmland had little biodiversity but, instead, had big populations of just a few species. Meanwhile, the poorer-quality lands had most of the wild species. Therefore the object of the world's farm policies should be to encourage the production of as much food and feed as sustainably as possible on the good land, so that we could save the lands rich in biodiversity from human impact. This remains the only visible strategy to save wildlands and wild species.

The biofuels wild card

Public policy in the Western countries is now gearing itself to radically reduce the production of so-called "greenhouse gases." At the same time, the Greens are maintaining their opposition to nuclear power. No country has yet shifted heavily to the costly and erratic solar panels and windmills. This leaves the world's governments in the odd position of demanding that their farmers create billions of gallons of biofuels.

continued on page 24

President Bush has mandated 35 billion gallons of alternative fuels by 2017. Corn ethanol is currently the only U.S. source of such fuels. Unfortunately, when we factor in the fuel required to produce the corn, and ferment the ethanol, and the 35 percent less energy in a gallon of ethanol compared to gasoline, the corn produces a net yield of only 50 gallons worth of gasoline per acre per year - against an annual gasoline demand of 134 billion gallons.

Biofuels are truly a strange policy outcome for an environmental movement that was founded on protecting forests and wildlife. How many million acres of trees are we willing to clear for corn ethanol?

Can we feed the world organically?

We are now using very little additional land to supply more than twice the world population of 1950 with much higher-quality diets. Techniques such as conservation tillage, which cuts soil erosion by up to 95%, and confinement feeding of livestock, have helped to increase production.

Today, organic and "natural" foods are the fastest-growing segment of the food industry. There is danger in this, however - especially for the environment. The total crop yields from organic fields are little more than half as high as the yields from comparable high-yield farms. Organic farmers also suffer bigger losses to weeds, fungi, crop disease, and insects. The big penalty comes, however, because organic farmers refuse to use nitrogen fertilizer. They force themselves to get their N from cattle manure or green manure crops. Both strategies require land - lots of it.

The Green Revolution was led by plant science, and supported by industrial fertilizer, pesticides, and irrigation. It has been carried forward by conservation tillage, confinement feeding, veterinary medications and computer-managed feed rations. The eco-movement has opposed all of these strategies.

Science backlash and the Third World as its victims

If the affluent West is denied energy and high-yield farming, so too will be the poor of Asia and Africa. The "green" solutions would reduce energy supplies by perhaps 75 percent and food production by more than 50 percent as we renounce nitrogen fertilizer. Those cuts in resource availability could not be overcome with today's technologies.

Food price inflation will begin robbing the world's poor of their claim on food supplies as organic mandates are forced on to production farmers around the world. Biofuels will begin forcing the clearing of more forests, from Indonesia's islands to the American Corn Belt. Along with the lost forests will go their ecosystems and wildlife species.

Ethanol and global warming

There is no evidence that human-emitted CO_2 has added significantly to the Modern Warming, nor that ending the use of fossil fuels will reduce our temperatures. Nevertheless, public policy in much of the world is being targeted at replacing most of our fossil fuel energy.

If we are lucky, we will limit or end the flirtation with biofuels before they wreck the economy, drive food costs beyond the reach of the poor, and deforest the rest of the planet. People are quickly coming to realize that having the critically needed food supplies at reasonable costs is more important than adding another 1 percent to our gasoline supply at radically higher costs.

Conclusions

The new vision for agriculture, then, is surprisingly like the old vision for agriculture. Farmers will need to redouble their yields over the next 40 years to preserve the planet's wildlands while feeding a peak human population of perhaps 8 billion. Farm costs will continue to be a major focus, as they always have been. We will need to work even harder to assure our increasingly distant customers of the sustainability of our farming, and the kindness shown to our farm animals and poultry. WHJ

Reinvent Canadian agriculture

Ernie Barber

The word "agriculture" has lost much of its positive brand equity with the Canadian public, believes Ernie Barber, Acting Provost at the University of Saskatchewan.

Those outside the industry are confused about the distinctions between farming and other natural resource businesses while the public image of agriculture in Canada is of an industry with significant economic and social problems, he says.

In addition, consumers are concerned about issues such as the safety and security of the food system and environmental sustainability. At the same time, school children and the public in urban areas often get a one-sided view of an agriculture from which they have become far removed. Consumers learn about food production from the media rather than from first-hand experience with agriculture. It's time to rebuild the awareness and trust of the public, Barber says.

A new definition of agriculture

The time has come for us to rebuild the awareness and trust of the public, and the confidence of farmers and agribusiness, by framing agriculture - the agriculture value chain to be more precise - within a more holistic bio-resources paradigm. This is a paradigm that places bio-based production systems - including field crop production, animal production, horticulture, forestry, wildlife management, aquaculture, conservation and biodiversity - all together as parallel and intertwined value chains that have a common purpose.

The challenges for "new" agriculture

Meeting the demand for food: The world will be challenged to feed nine billion people by the end of this century, but today we can barely feed five billion and another billion go hungry. We need to double world food production and do this with less water and less land.

continued on page 26

Replacing of fossil fuels: At the same time that the bio-resources sector is being challenged to feed the world's population, it will also be called upon to use arable lands to produce bio-energy and biomaterials as feedstock for a whole host of industrial and consumer products that are currently produced from dwindling fossil fuel reserves.

Providing environmental solutions: The bio-resources industries are a major user of fresh water and of the best land. The challenge is to ensure that from now on these industries do not irreversibly deplete or destroy the natural resources upon which its sustainability depends. The bio-resources sector will also play a vital role in managing carbon and assisting the world to reduce greenhouse gases and their deleterious implications for world climate change.

Improving human health: Through its direct and indirect influence on human health, animal health and environmental health, the bio-resources sector has a major role to play in improving the health of people and reducing the costs of health care. The public is concerned about the safety and quality of their food supply and they are not always convinced that modern input-intensive systems meet their needs. An aging population in the developed world is becoming more concerned about nutrition and wellness.

Adding economic value to society: The transformation of natural resources into bio-based products and services creates employment, attracts new investment, and contributes to the wealth of Canadians. Our challenge is to add more value to natural resources and to ensure that all participants in the value chain are adequately rewarded for their investments and labour.

Now is the time to commit to a development paradigm that envisions a gradual transformation from a petroleum and non-renewable resources economy to a bio-economy.

Becoming a bio-economy – a great opportunity for Canada

No other country in the world is better positioned than Canada to lead this world transformation to the bio-economy and know that it has the resource base, the science base, the industry base and the public support to achieve this vision. We control substantial petroleum reserves, which we can develop in a strategically controlled way through a period of transition to the time when renewable energy sources are developed to replace fossil fuel energy, and when bio-chemicals provide an alternative to petrochemicals. We are blessed with an abundance of high quality water and land and a plethora of well-adapted biodiversity, which form the foundation for a sustainable bio-based economy.

Agriculture must include the entire value chain

The bio-resources system can be considered as a value chain with four links: natural resource management; bio-production systems; bio-refining and processing; and consumer services. All businesses in the value-chain need an opportunity to receive a fair return for investments in capital, expertise and labour. Particularly relevant today is the challenge that primary bio-production enterprises, including farms, have in reliably extracting profit from their work in the value chain. Without primary resource producers there can be no sustainable value chain and no sustainable way for consumers to be supplied with the bio-based products and services that they need. I believe that the solution involves finding ways to increase the value that is created within and through the value chain rather than trying to redistribute the existing wealth among the links in the chain.

Conclusion

Canada needs a strong new vision for how it will contribute to and lead the transition to an environmentally conscious, health conscious, socially responsible and sustainable bio-economy. The entire world population depends upon how well we will be able to meet the challenges to develop and use our soil, water and biotic resources in fully renewable plant, animal and microbial production systems, to produce all of the most important consumer products and services that people need for a high and sustainable quality of life. WHJ

• Putting the chill on COOL

Summarized by Bernie Peet

USA COOLs Canada

Steve Meyer, President of Paragon Economics

Mandatory country of origin labelling (MCOOL) is a bad deal for the US and Canadian pork industries and is a back-door protectionist measure that has nothing to do with product quality or safety, says Steve Meyer of Paragon Economics, Iowa. It is based on a desperate belief that adding costs to Canadian pigs will keep them north of the border. Its proponents erroneously believe that, in so doing, those pigs and the pork they produce will not affect US pork and hog prices.

MCOOL: history and current situation

MCOOL became law as part of US agricultural legislation in 2002. However, the MCOOL provisions never passed either house of Congress as part of the houses' separate farm bills but were stuck into the final version of the bill in the conference committee, which hammers out differences between the two houses' versions of laws.

MCOOL was originally to go into effect in September 2003 but was delayed, first by USDA as it wrote implementation rules and then twice by Congress as the industry pressed for repeal. MCOOL is now scheduled to commence on September 30, 2008 and the Democrats that control both houses of Congress will not allow that to be changed.

The US House of Representatives passed its version of 2007 US farm legislation in July. That bill contains language that changes some of the original MCOOL legislative language. The changes enacted this summer fall in three main categories:

Ground meat labelling: Ground beef, pork or lamb can be labelled with a list of countries that the meat may come from. This affects primarily beef since ground lamb and fresh pork are relatively minor commodities and sausage was already exempt from the legislation as a processed product.

Records: Suppliers cannot be required to keep records that are beyond those that they keep as a normal part of their business operations. We believe that this will allow producers to provide the purchaser of livestock with a statement that says "Here is where the animals come from and I have records that prove this" and that will be all there is to it. A string of those documents through the marketing system will eventually allow someone to confirm the origin of an animal.

Country of origin labels: Congress decreased the number of labels that would be required for pork from 4 to 3. The final wording, though, prevents that number from being reduced to 2 by saying that animals born, raised and slaughtered in the US cannot be part of a mixed-origin label and thus must be labelled as Product of the US. Any pig with a Canadian heritage of any sort will carry a Product of the US and Canada label while imported meat will carry a Product of Canada label.

MCOOL issues and implications

My long-standing opposition to MCOOL is founded on a number of factors. Among them are these:

- MCOOL will not result in long-term higher hog prices for US pork producers
- MCOOL does not provide additional food safety assurances for US consumers, especially as it only applies to about half of all the pork eaten in the US since it excludes product that sells through foodservice. MCOOL's exclusion of processed items cuts this percentage by 30-50% again, meaning that perhaps one-quarter of US pork consumption is actually covered
- MCOOL will reduce long-term US pork exports by creating comparative advantages for our export competitors such as Canada
- MCOOL will place US pork producers at financial risk if they either have to indemnify their customers or if either the packer or a pork producer were to fail an audit
- MCOOL will favour more vertically integrated pork production systems in both the US and Canada
- MCOOL creates a permanent cost advantage for poultry, even if those species were to be covered by the law. The only cost of MCOOL for US poultry is the ink to print the label. No poultry is imported into the US and virtually all comes from vertically integrated systems where the cost of records will be near zero.

I see huge problems in the details of implanting a law that is aimed at labelling less than 50% of the product from animals that go to market in the US. My fears are compounded by the fact that US consumers have indicated no willingness to pay for country-of-origin labelling.

In addition, the system will:

1. ***Create a two- tiered pricing system.*** This law creates a "price wedge" between US-sourced and Canadian-sourced pigs. These pigs may be restricted to certain plants and days of the week for marketing. They could also be discounted because of the extra record keeping required and the fact that product from these pigs will have to be segregated and labelled separately.
2. ***Likely hurt the US position in international pork trade.*** US prices paid for Canadian pigs will fall, thus driving down prices of pigs and finished hogs in Canada. This will provide a cost advantage for Canadian packers that will give them an advantage in international trade.
3. ***We see problems in the details*** of implementing a law that is aimed at labelling less than 50 % of the product while requiring the identification and tracking of all of the animals that go to market in the US.

4. ***Traceback system*** -The statute prohibits USDA from implementing an animal ID or a traceback system. There is nothing, though, that prohibits retailers, processors and packers from doing so. The US pork industry is well on its way to getting this system in place and it will actually help MCOOL at some point – but first things need to be first.
5. ***Possibly create a significant record-keeping problem.*** If a verifiable audit trail is required, producers will have to keep records establishing the source of pigs and documentation stating their origin will have to accompany each load of pigs delivered to the packer. Also, the requirement for records implies some sort of auditing.
   The House-passed 2007 Farm Bill eases some of these apparent requirements by limiting the records requirement to those items that are presently kept as part of "normal business operations." In addition, the new version reduces the potential civil penalties, making the risk of a large economic loss much less.
6. ***Effective date issues*** – Enforcement would begin 12 months after date of publication of final rule. USDA will not likely have a rule published much before the September 30 commencement of MCOOL, much less in time to allow producers to get their records in order to satisfy the requirements on the date of implementation. However, the House version of the Farm Bill simplifies this issue by saying that product from every animal in the US on January 1, 2008 will be called Product of the US. That means that producers need to start keeping adequate records on any animals born or imported on January 1 or after.
7. ***Impacts on certain types of pork producers*** – The law will have widely varying impacts on producers of different types. Integrated production and processing systems will find it easier to comply and will incur few added costs, so that retailers will favour this type of supplier. Producers working in a contract system will also have some advantage, but will have to keep the appropriate records. Independent producers will have the highest costs and their pigs will be the most "risky" to the processor and retailer.

Summary

MCOOL's roots trace back to the North American industry's severe financial crisis of 1998 and 1999. Even in those difficult times, the Canadian breeding herd was expanding and shipping more and more pigs to the US, giving rise to the COOL legislation and NPPC's decision to ask for countervailing duties on imported Canadian pigs.

COOL was not the correct response. The US in general and NPPC in particular remain committed to free trade. That's the reason NPPC has opposed this from day one. But should tough economic times return and the Canadian sector not respond in a way that is at least close to what US responses and economic theory suggest is correct, there will be more tension.

The biggest irony, or course, is that MCOOL will hurt most of those small, independent "family" farmers that the Senators and Representatives believe they are protecting.

MCOOL will take a great deal of time, effort and money and generate hardly any benefits. But the Congressmen and Senators "did something" and that seems to be what counts.

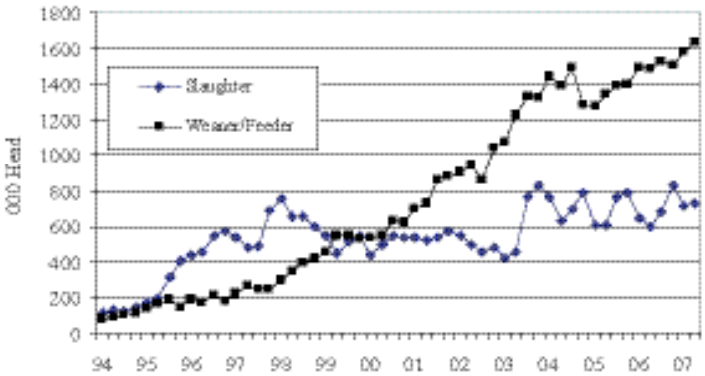
COOL is a hot problem

Kevin Grier, from the George Morris Centre

Country of Origin Labelling (COOL) is likely to have major negative ramifications for the Canadian cattle and hog industries, says Kevin Grier from the George Morris Centre. It could result in lower prices in Canada, which would accelerate producer attrition and the decline in the national herd sizes for both cattle and hogs, he believes.

Assessing the importance of trade, particularly with the US, provides perspective on the significance of COOL. In 2006, the Canadian packing industry slaughtered about 21.6 million head and, in addition, sold nearly 8.8 million live hogs to the US. Figure 1 shows the trends in quarterly exports of slaughter hogs and weaner/feeders from 1994 through the second quarter of 2007.

Figure 1: Trends in Canadian hog exports to US – 1994 to 2007



In total, Canadian hog producers marketed about 30.4 million live hogs, of which 29% (8.8 million) went to the US. Canadian packers also sold 364 million kilograms of pork to the US, equivalent to 5.4 million live hogs. Therefore, the US was the destination for over 14 million Canadian hogs in either live or meat form, or 47% of all pigs produced. That provides a solid perspective on just how important the US market is to the Canadian industry. The fact that the purpose of Country of Origin Labelling is to deter or reduce Canadian imports helps to focus attention on the importance and threat of this legislation.

Essentially, under the original version of COOL that was proposed in 2002, the law required that all fresh pork and beef sold at retail in the US be labelled as to the country of its origin. Needless to say this would involve multiple labels, which would increase costs through the chain. COOL for seafood is already in place in the US and it has proven to be far more costly for retailers than the original USDA estimates.

Both retailers and packers have asserted that the legislation was burdensome and unnecessary, as consumers were not demonstrating particular interest in the origin of their beef and pork. In that regard the potential consumer benefits of COOL are doubtful.

In 2003 and 2004, when COOL first raised its head, the George Morris Centre did a great deal of research regarding the impacts of the legislation. The bottom line of the research was that US packers would need to segregate, sort, control and account for Canadian livestock that they purchase. They would also need to segregate and label the meat from these animals separately from other meats.

Needless to say, handling Canadian livestock would increase risks of mislabelling by US packers. More importantly, handling Canadian livestock would be more costly than running a plant without Canadian livestock. For example, the research estimates indicated that handling Canadian hogs would cost packers an extra $5-10/head.

These extra costs and risks mean one of two things: US packers won't bother buying Canadian livestock, or US packers will discount bids on Canadian livestock by the amount of the added costs and risks. Some packers simply said they could not take the risk or the added costs of buying Canadian cattle. Other packers said they would need to pay less for Canadian cattle due to higher costs. More

than 160,000 hogs and 20,000 cattle cross the border each week. That means that livestock prices in Canada will decline as soon as the legislation is enforced.

The George Morris Centre research concluded that COOL is nothing less than a non-tariff barrier to trade. COOL would impede livestock imports. That, of course, is exactly what its proponents, mostly US cattle producers, intended when they pushed for the legislation.

This legislation in its original form has the potential to exert a very damaging impact on the Canadian livestock industry. It will result in lower prices in Canada and will accelerate producer attrition and the decline in herd sizes for both cattle and hogs. As noted earlier, Canadian livestock producers are not alone in facing negative consequences resulting from COOL. US cattle feeders, hog finishers, packers and retailers will all be worse off. Not only will they face higher, non-productive costs, but also they depend on Canadian livestock for their packing plants, feedlots and finishing barns. In addition, the US benefits from livestock imports due to the fact that all the value-adding and jobs occur there, not in Canada.

As a result of this US producer opposition to COOL, there have been changes made in the proposed law, which were outlined in Steve Meyer's presentation. Unfortunately, at the time of this writing, the final version of the law has not yet been made clear.

As of the fall of 2007, US packers are uncertain as to how they are going to react to the possible "compromise" version. Packers not only are uncertain if the compromise will be in the final version, but they also do not know how onerous the final rules will be once written by the USDA. Finally the packers are uncertain as to how their customers will react to the compromised version.

Conclusions

If the legislation remains in its 2004 form, US packers would need to document and segregate Canadian livestock, which could result in them either not purchasing Canadian pigs or reducing the price paid. However, if the compromise version becomes law packers would have a great deal of leeway in how product is labelled and not incur additional costs for labelling. If this in fact is the case, then COOL would be meaningless to Canadian livestock producers and it would be business as usual.

The compromise worked out in the House does give hope that Canadian livestock will not be discounted. That hope was dim prior to the summer of 2007. Another hopeful point is that it appears that COOL is in direct contradiction to US trade agreements. These agreements state that any animal slaughtered in the US is product of the US. If that holds, then COOL's interference is not valid and could be overturned.

The bottom line is that COOL remains a source of uncertainty and risk for Canadian hog producers at a time of mounting uncertainty and risk in most other areas of their businesses.

Summarized by Bernie Peet

Benchmarking and cost – production relationships

Greg Bilbrey

Benchmarking is an effective tool for identification of strengths and opportunities as well as measuring progress and trends, says Greg Bilbrey of Agri-Stats. Each swine production company should be participating in some type of benchmarking, he believes. His benchmarking data shows that Canadian participants achieve higher production levels than their counterparts in the US but are more severely challenged with higher costs

Agri Stats collects and processes financial and production data from livestock production companies and produces detailed reports and performance summaries that allow them to compare their performance to other participants, the average of all companies and the top 25%.

In swine, there are currently forty-five finishing locations and thirty-five sow locations included in the monthly comparison. The monthly report accounts for a little more than 1.4 million sows and 2.4 million weaned pigs. Over a twelve-month period, the number of weaned pigs included in the analysis is approximately 30 million. The finishing comparison includes about 28 million pigs over a twelve-month period.

Benchmarking

Zimmerman states that:

Benchmarking is a process of continuously comparing and measuring an organization's business processing against business leaders anywhere in the world to gain information which will help the organization take action to improve performance.

Note the mention of *"continuously comparing and measuring" and "against business leaders"*. Obviously for benchmarking to be effective it must receive a committed and ongoing effort. Comparison should, of course, be against those companies or entities leading in the specific industry or a compilation of data from industry participants.

Benchmarking in the swine industry could range from simple production comparisons to elaborate and sophisticated total production and financial comparisons. Each and every commercial swine operation is encouraged to participate in some benchmarking effort.

In the current swine industry, many efforts are made to improve or maximize performance in specific production variables. Efforts to improve performance in each area of production are necessary and crucial to the growth and survival of the industry. Benchmarking production can help improve performance. However, including only production measurements in a benchmark comparison can lead participants in the wrong direction and some measurements of cost and/or financial performance should also be included. We must remember that the ultimate goal is increasing profitability – not always increasing the level of production.

Production – cost relationships

A profit factor and variance analysis was performed to determine the advantages that the most profitable companies in the Agri Stats report have over other participants. Rankings and variances to the average company were recorded for twelve performance measurements. Totalling variances by category and expressing them as percentages identified the categories where the Top 25% held bigger advantages. This analysis revealed the following observations:

- Those companies in the Top 25% in profitability did not necessarily have the highest production numbers. They did, however, have advantages in cost.
- It was possible to rank near the bottom in key production parameters yet still be at the top of the list in profit.
- Some companies that received lower sales prices still ranked in the Top 25% in profit.
- Getting more pigs to market – whether by lower mortality or higher productivity – seemed to be the most critical production category affecting profitability.

continued on page 34

- Mortality in Nursery/Finishing and Pre-Wean were three of the top four categories in variance advantages for the most profitable companies.
- Traditionally, popular performance measurements such as gain/day, feed conversion, number born live, pigs/mated sow/year, etc. did not show up as top ranking advantages affecting profitability. Of course they do impact cost.
- It appeared that overcoming poor performance with lower cost was more fruitful than trying to overcome high cost with best production.

This analysis and these observations obviously reflect the findings from this data set and may not be completely applicable to all swine enterprises. Despite a lack of detailed statistical analysis, the basic findings seem very logical – get more pigs to market, don't feed or house them and then let them die, and work to have the lowest cost.

The fact that the number one company in profit did not rank very well in PMSY indicates other factors can greatly influence profitability. Companies with higher feed costs/ton made it in the Top 25% list by being efficient and having advantages in other areas. Again, while improving production is an important effort, it may not always be the most profitable decision. The take home message is that a swine production company or entity needs to be aware of their advantages and disadvantages so they may properly position strengths and allocate efforts for improvement.

Canada – USA comparison

Much has been discussed and published recently regarding the current challenges facing the Canadian swine industry. The high value Canadian dollar compared to the low value US dollar is an enormous issue. Other items such as prices received, shackle space availability, freight to market and component costs are also key considerations.

Agri Stats publishes Canadian and US averages on key report pages. Highlights from a CAN – US comparison are mentioned below:

- CAN had an advantage in terms of finishing market weight, gain/d and finishing mortality. Feed conversion is higher compared to that in the US.
- CAN has moved into a period of negative margins while margins in the US have tightened.
- Sales price received for CAN participants was about $3/ckg below the US average. In Agri Stats, market freight is deducted from sales price for confidentiality. This could be a contributor to the lower CAN prices. Freight has been deducted from both CAN and US sales prices.
- Total finishing cost for CAN participants was $5.60/ckg higher.
- Pig placement cost (CAN = +$7.54/ckg), facility cost (CAN = +$3.90/ckg), milling and delivery (CAN = +$1/ckg) and farm haul (CAN = +$1/ckg) were the components contributing to higher production costs in CAN.
- CAN had advantages in feed cost (-$6.76/ckg), medication (-$0.50/ckg) and farm overhead (-$0.60/ckg) vs. the US. One may not expect a feed cost advantage for CAN. This can be explained by the geographical locations of the Agri Stats participants. CAN participants are located mostly in the western plains while US participants are located from North Carolina to California. Certain locations in the US are farther from the US Corn Belt than the CAN locations and have geographical disadvantages in ingredient purchasing.
- CAN has routinely demonstrated sow production advantages to the US (+2.8 PMSY; +0.1 LSY; +0.58 NBL; -2.35 % PWM), though weaned pig cost is historically higher ($5/pig for September 2007).
- The CAN production advantage reduced weaned pig cost in the twelve-month period by -$2.86/pig. That advantage shrank to -$0.22 /pig in the month of September 2007. The effect on cost of lower production in the US changed from +$0.28/pig in the twelve month period to +$0.09/pig in September.
- Sow cost per weaned pig was $1.87 higher in CAN for September 2007 and recent months.
- CAN semen cost is trending higher and has become a disadvantage relative to the US.
- Feed cost per weaned pig has typically been about $2 lower in CAN when compared to all areas of the US.
- Facility cost in CAN has historically been higher than the US although the disadvantage for CAN is increasing ($0.50 to $2/pig).

Conclusions

Benchmarking is an effective tool for identification of strengths and opportunities as well as measuring progress and trends. Each swine production company should be participating in some type of benchmarking. To gain maximum benefit, production, cost and financial performance should all be part of the benchmarking program.

Canadian benchmarking participants achieve higher production levels than their counterparts in the US but are more severely challenged with higher costs. Recent trends indicate the production gap may be reducing. This primarily is due to declines in Canadian production at the same time as US numbers have improved.

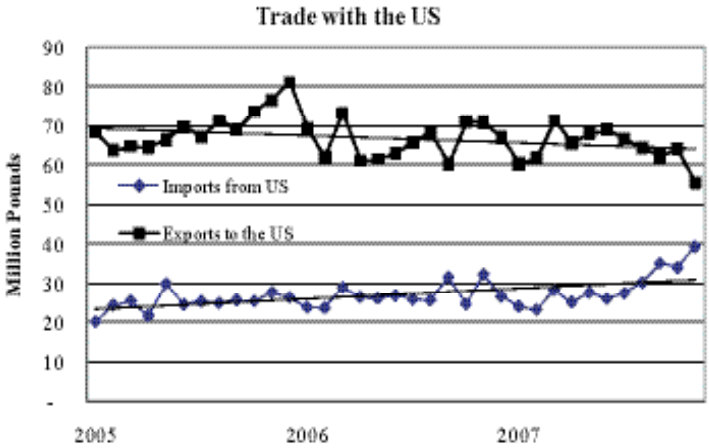
Do we have a pork packing industry in Canada that will survive?

Kevin Grier

Canadian packers are uncompetitive compared to their US counterparts, says Kevin Grier of the George Morris Centre. They do not realize the same economies of scale, have higher labour costs and do not add sufficient value to the end product. With a falling sow base and a continuing increase in the number of pigs shipped to the US, the packing industry is undergoing rationalization and will soon look a lot different than it does now.

A company is competitive when it has the sustained ability to profitably gain or maintain market share. Competitiveness may come from scale, which reduces overhead costs per unit, from good access to raw materials or through advantages in the supply chain that reduce cost. It may also arise from the ability to add value to the product or through product differentiation. However, says Grier, while US packers deliver profits quarter after quarter, Canadian packers are losing money. "Olymel is said to have made $150 million losses between 2003 and 2006, while Maple Leaf is coming to the end of a dramatic restructuring which involves plant closures and sales, with a move to double-shifting at the Brandon plant." The lack of competitiveness is also reflected by increased exports of market hogs, feeder pigs and isoweans heading south. "Nine million hogs per year is not a sign of packing health," Grier explains. Perhaps more worrying is the massive increase in exports of pork from the USA to Canada over the last few years due to the rising Canadian dollar (Figure 1).

Figure 1: Canadian imports and exports of pork from/to the USA



Over the three years to the end of 2007, pork imports have just about doubled, while Canadian exports to the USA have fallen significantly. "If our packers are not profitably gaining or maintaining market share, then, by definition, they are not competitive," says Grier.

Size and throughput are key drivers of efficiency and cost and larger plants have lower costs per head than smaller plants. But, while the average daily capacity of plants in the US is 13,000, in Canada it's just 3,200. Every large plant in the USA operates a double shift whereas, in Canada, only Maple Leaf currently double-shifts. Labour availability is another problem faced by the Canadian packing industry. "The current labour shortages lead to lost opportunities in throughput and value adding," Grier explains. "Also, the total hourly cost of wages and benefits in Canadian plants is significantly higher than in US plants, especially in Quebec." Labour cost is a major factor in the total

continued on page 36

cost disadvantage of Canadian packers, he says. "For a plant processing 40,000 hogs, with 1000 employees working 40,000 hours, each $1/hour adds $1 per hog to processing costs." Overall, he estimates factors such as plant size, capacity utilization, labour and the inability to capture value from offal may cost the industry up to $8 per hog. This means that Canadian packers are prepared to pay less for their hogs. "Inefficient packers, with high operating costs mean lower hog prices for producers," Grier points out. "The increased value of the Canadian dollar has made this situation much worse".

Outlining possible packing scenarios for 2012, Grier said that a significant drop in sow numbers, due to the financial pressures producers face, would lead to further rationalization in the packing industry. In the Maritimes, the closure of Maple Leaf's Berwick, NS plant and the likely closure of the former Garden Province Meats plant will leave a small local-based industry, with most producers shipping pigs outside the area for finishing or slaughter. "In Quebec, typical weekly slaughter numbers are now 155,000, but by 2012, this number may only be 130,000," Grier predicted. "This could be achieved in one big plant, plus a few smaller ones."

In Ontario, the future of Maple Leaf's Burlington plant is still up in the air but there is a strong likelihood that this capacity will be lost. With reduced sow numbers and the increase in pigs being shipped to the USA, the province may only need to kill 60-70,000 head per week by 2012, Grier predicts. This could be achieved by Quality Meat Packers and Conestoga Meat Packers, together with some smaller packers. In Manitoba, he suggests there will be little or no change in the sow base and the two packers, Maple Leaf and Hytek, will process 105,000 hogs per week. It's uncertain whether the current situation in Saskatchewan, which has no processing capacity, will change although there are proposals for a new plant in Saskatoon that are quite well advanced. Ominously, Grier's slide headed "Alberta" said just one thing – "Small regional packers" – reflecting fears in the industry that Olymel's Red Deer plant might be closed.

To move forward from the current uncompetitive system requires a number of changes to be made, says Grier. Labour availability must be increased by improvements to the Foreign Worker Program, while investment in scale and increased automation would help to improve labour efficiency. The Canadian regulatory environment and its associated costs, such as CFIA inspection charges, must be brought more into line with those in the USA. And, he feels, there will be increased vertical integration or coordination.

In answer to the question posed by the title of his presentation - Do we have a pork packing industry in Canada that will survive - Grier says, "Not like it is now we don't." But, he concludes, both packers and producers know what needs to be done and will change and adapt.

WHJ

Our producers must survive!

Clare Schlegel

There is a crisis of confidence in the Canadian pork industry and producers are facing serious liquidity issues. Assistance is needed from governments to transition through this difficult phase, says Clare Schlegel, President of the Canadian Pork Council. But is this just the low in a normal hog cycle or a fundamental change that will continue? Schlegel believes that pork producers around the world need to re-adjust to the new environment with high feed prices and the low US dollar in order to survive. Inevitably, not all will make the journey, he says.

Recent trends in Canadian pork production reflect the increasing difficulties faced by the industry, with a reduction in sow numbers, increasing exports of live pigs to the USA and a drop in the volume of pork export. At the same time, imports of pork have risen at an alarming rate. While many other countries around the world face similar challenges, the relative strength of the Canadian dollar has increased the pain felt by our producers. In an extreme scenario, pork production could disappear from Canada if the dollar continues increasing in value and the industry cannot compete due to higher input costs and lower hog prices relative to the US, says Schlegel. "Does Canada have 'Dutch Disease'," he asked, quoting what happened to the manufacturing sector in Holland after the discovery of North Sea gas. "This is defined as the de-industrialization of a nation's economy that occurs when the discovery of a natural resource raises the value of that nation's currency, making manufactured goods less competitive with other nations, increasing imports and decreasing exports."

Although there have been periods of low prices in the past, we could be in the situation of a fundamental shift in the economic environment, Schlegel believes. The question is, he says, how much of the industry will survive? If the current challenging situation continues for the longer term, both producers and processors will have to become more cost-efficient in order to compete. "In this scenario, we need engagement by all sectors of the industry, including governments, for the pork business to have a chance of continued success and also a transition period to adapt. This should include help for producers to get through the crisis or an option to quit the business for those who choose," he says.

The industry also needs to address many competitiveness issues, including trade access and regulatory barriers such as CFIA inspection costs, animal health approvals and environmental regulations. "We must become more competitive throughout the production chain," stresses Schlegel. "We must get our costs and revenues in line with the competition." In particular, processors must become cost competitive with those in the US, because we are in an integrated market. "Reducing prices to producers is not a sustainable option," he says.

The government's role is to assist in providing a stable business environment, he feels. "Our value-added sector is threatened and it would be unfortunate if, in five years, the resources sector declines, but manufacturing has disappeared." The industry and its organizations must also do its part and promote the image of Canadian pork more effectively, focusing on food safety, consistency of supply and traceability, he says.

Despite the current situation, there are many positives for the Canadian industry, says Schlegel, including an increase in global demand for pork. With the commitment of governments and supply chain partners, the industry can make the transition required, even though not everyone will make it, he concludes.

Containing the cost of energy

Summarized by Bernie Peet

VISUAL MANAGEMENT AND ENERGY CONSUMPTION ON HOG FARMS

Roland Harder

Hog producers have traditionally focused on managing feed consumption while usually ignoring electrical, fuel and water consumption, according to Roland Harder of the Puratone Corporation. However, energy wastage occurs in any hog operation, regardless of the farm size or management skills.

Lower costs are easily achievable by understanding the relationship between pig performance and energy consumption for heating, ventilation, lighting, washing or manure disposal. The use of visual energy management tools, such as Puratone's BarnMax system, can save up to $0.80/pig, Harder says. Targeting energy consumption saving is important for both survival in the current economy as well as for the environment.

The concept

The consumption of resources such as electricity, fuel, feed and water in confined livestock production is managed using either automated or manual control systems. Automated systems are used to regulate indoor conditions such as temperature and humidity through control of heating and ventilation systems. Feed and water delivery may also be controlled automatically. Manual systems are generally used to manage lighting, waste disposal and cleaning, in accordance with best practice management.

Conventionally, measuring actual consumption occurs after the fact and is used mainly for reporting and accounting purposes. Also there is no indicator or metric that can be used as a baseline. This, in turn, means there is no analysis task for comparing the actual with the optimum consumption so there is no process for assessing strategies for improvements. As a result, the processes often become wasteful, as evident from the large and inconsistent differences between actual consumption of resources and optimum values.

An improved approach defines optimum consumption levels at the beginning of the cycle, and requires continuous, or "real-time", monitoring of consumption using sensors and meters. Then, data for actual consumption can be analyzed and compared with optimum. Any deviation from the calculated levels can be measured and staff alerted if an abnormal variation occurs. Also, such data can be used to manage and improve both automated and manual control systems in order to bring actual consumption close to optimum.

Large variability in consumption

In 2003, 15 hog finisher farms were selected to investigate the reasons for the significant variability noted in energy consumption and cost in the Puratone production system. The annual energy consumption and cost ranged from 75 MJ/pig ($0.90/pig) to 300 MJ/pig ($3.50/pig. The investigation focused on determining the optimum levels of energy that each of these farms were supposed to consume according to their own equipment, building design and location conditions. This

continued on page 40

revealed that the largest contributing factor was the way in which the processes were managed. This inconsistent management of the processes was largely due to lack of visual monitoring of the energy consumption.

Based on these findings, it was hypothesized that if optimum energy consumption pattern values were displayed side-by-side with actual consumption values and made visible on a continuous basis, farm workers and technicians would then improve their management of energy consumption by reacting to significant and unnecessary deviations in a timely manner.

Development of the BarnMax system

The key aspects of the system are as follows:

- Use of the optimum consumption levels of resources instead of historical values as a baseline, calculated for each individual farm. These values then reflect optimum performance of animals while maintaining consumption values at a minimum.
- Continuous updating of optimum consumption levels instead of using "static" targets or specifications.
- Use of the visual management concept to improve and sustain improvements.
- Use of simple and non-intrusive tools for sensing and monitoring that eliminates installation or maintenance expenses

Between October 2003 to October 2004, this concept was tested at the same 15 finisher farms. Specifications were developed to describe the optimum targets of the different process outputs (e.g. heating, ventilation etc.). Then, workers were engaged in the process of measuring and monitoring their own farm energy consumption and comparing actual with projected consumptions. Where a problem was noticed, either that farm's manager or company technician was contacted to identify the cause and fix it.

Benefits of BarnMax

The benefits of BarnMax can be summarized as follows:

Reduced waste in electricity, fuel, feed and water consumption through:

- Maintenance of facilities and equipment to keep them in the necessary condition to keep actual consumption close to optimum levels
- Real time visual monitoring of the consumption processes, both actual and optimum, so that operators and managers respond in a timely manner if levels of actual consumption deviate from the optimum.
- Electricity demand control system to automatically keep demand within set limits

Improved and sustained good management practices on-farm through:

- The visual management tool encourages farm workers to participate in managing the different consumption processes and thus improves their skills and understanding of the components of these processes (e.g. heating, ventilation, etc.)
- Real time feed storage inventory for feed mills to assist in better planning for feed delivery
- Real time records of water consumption that help in assessing animal health and performance as well as improved planning of managing manure (pit disposal, lagoon emptying)

At the end of October 2004, implementing this process of visual management of energy consumption resulted in a total annual savings of 17,000 GJ ($193,000) and resulted in a better understanding of how to manage energy related processes inside the farms. There was also a resulting reduction in variation in energy consumption for the same 15 farms. It is expected that the addition of feed and water modules, as well as introducing the system to other types of farms, nursery and sow, will result in additional savings of more than $1,800,000 per year.

Conclusions

Resource consumption is a major cost control centre for pork production. The Puratone experience has shown that very considerable savings are possible in energy consumption by implementing an improved process control system. This system is based upon using optimum consumption as the benchmark, rather than historical consumption. Successful application of the system is a result of active monitoring and involvement by the farm staff.

Ray Boris

ENERGY SAVINGS WITH HEAT PADS AND LIGHTING

The use of energy efficient heat pads saves about $45 annually per farrowing crate in power costs, while there is no difference in piglet mortality and weight gain compared to pens fitted with heat lamps, says Ray Boris of Manitoba Hydro. Furthermore, replacement of existing fluorescent lighting

continued on page 42

with newer equipment can result in 20-30% lower operating costs, he points out.

Heat lamps or pads?

Research has shown that there is no statistical difference in weight gain and mortality between piglets raised on heat pads or heat lamps. Heat pads provide a comfortable heated zone for the newborn piglets and piglets tend not to seek warmth from the sow, which reduces crushing losses. Heat pads also offer a large comfort area that minimizes piglet piling.

Heat pads were also compared with a combination of heat pads and 100-watt heat lamps for the first 4 to 24 hours. This revealed that there was no statistically significant difference in weight gain and mortality, however, the heat lamps helped to dry off the birth fluid.

Commercial trials have measured the differences in energy consumption between rooms with heat pads and those with lamps. The conclusion was that there was no difference in weight gain and mortality between the lamp and pad rooms. The heat lamps consumed 1279 kWh per crate and the heat pads consumed 383 kWh per crate. Heat pads therefore reduced power consumption by 70%.

In the winter, the trial room with heat pads only had a higher relative humidity than the test room with heat lamps (66% vs. 55%).

Benefits of heat pads

- The saving of 896 kWh of energy per crate per annum vs. heat lamps is equivalent to $45 at 5.0¢/kWh.
- An additional saving on replacement of 1.5 heat lamps per annum, or equivalent to $15 at $10 per heat lamp.
- Heat pads provide a larger comfort area so that piglet piling is minimized. Heat pads also protect the piglets from drafts rising through the slatted floor of the farrowing pen.
- Heat pads eliminate the potential fire hazard of heat lamps, broken lamps, the waste of natural resources in burned out lamps and the need to replace heat lamp sockets.
- Heat pads require less electrical maintenance than heat lamps, can be washed down with a high pressure washer, and have an expected life of up to 15 years compared to two-thirds of a year for typical heat lamps.

In addition, incentives may be available for replacement of heat lamps with pads, for example Manitoba Hydro offers a rebate of $50 for a heat source in the crate of 75 watts or less and $30 for one of 76-100 watts. Depending on costs and the incentives available, the payback period for replacing heat lamps with pads may be as short as 1.7 years. Without the incentive of $50, the payback period is increased to 2.5 years.

Recommended lighting levels

Table 1 shows the recommended lighting levels for various types of pigs

Table 1: Recommended illumination levels.

Type of housing	Light levels Lux	Footcandle	Photoperiod, hrs/day	Comments
Breeding/Gilts	>100	>10	14-16	Necessary for estrus cycling
Gestation	>50	>5	14-16	To assist missed cycles, bring on estrus again
Farrowing	50-100	5-10	8	If no heat lamps, light in room 24 hours per day
Nursery	50	5	8	Light in room 24 hours per day
Grower-Finisher	50	5	8	

Source: ASAE EP 344.3 January, 2005

Research shows that gilts benefit from exposure to 14-16 hours of light each day. Gilts reach puberty sooner, have a longer estrus and farrow more piglets per litter than gilts reared in reduced light conditions or in the dark.

Studies also show that differences between incandescent, fluorescent and metal halide lighting do not appear to have any effect on hog performance.

Using T8 fluorescent lighting

T8s are slim, high-efficiency fluorescent lamps that generate more light per watt than T12 conventional lighting and are 20-30 per cent more energy efficient. Compared with incandescent lamps, T8s also last ten times longer, and require less maintenance, contributing to lower labour and maintenance costs.

Although lamp pins are identical for T8s and T12s, converting to T8s requires new electronic ballasts. These improve power quality, and create quiet and virtually flicker-free generation. Instant start ballasts are recommended for swine barns as they reduce energy consumption and are recommended for starts three hours or more at a time.

Choosing the correct lighting type

Figures for typical efficiency of converting power into light (lumens per watt) and the rated average life for a range of lighting types are shown in Table 2.

T8 fluorescent lighting is the most economical for barns and generally used where mounting height is 12 feet or less. For mounting heights of 12 feet or more T5 lighting or pulse start metal halide lighting may be used.

Table 2: Typical lamp characteristics

Lamp type	Typical efficiency - lumens/watt	Rated average life, hours
Incandescent – 100 Watt	15	750 – 2,000
Compact Fluorescent	60	12,000
T8 Fluorescent – 4 foot	88	20,000 +
T5 Fluorescent – 4 foot	89	20,000
T5 HO Fluorescent – 4 foot	82	20,000
Metal Halide Pulse Start - 175-watt	81	15,000

Compact fluorescent lamp and ballast systems provide good energy efficiency and are easily retrofitted into incandescent fixtures. However the shorter equipment life and higher cost to replace lamps and ballasts compared to T8 fluorescent systems increase operating costs. Sealed screw-in lamps must be used in a barn environment.

Pulse start metal halide lamps are more energy efficient than standard (probe) metal halide lighting. They provide energy savings of up to 20 per cent more light per watt, lower maintenance costs, usually have a longer life and produce a whiter light for better colour rendition.

In conclusion, common T12 fluorescent lamps should be replaced with T8 lamps because of their 20-30% lower operating cost, longer lifespan and compatibility with existing fixtures. Incentives available, in some locations, for the necessary replacement of the T12 magnetic ballast with the T8 electronic ballasts significantly reduce the costs of conversion. WHJ

Eradication of PRRS

Presented by Julie Ménard and Peter Davies
Summarized by Cara Dary, Alberta Pork

Porcine Respiratory and Reproductive Syndrome (PRRS) is thought to affect upwards of 80 per cent of Canadian hog barns, costing $10 to $20 per pig in a PRRS positive herd. Not only does PRRS cause a reduction in sow reproduction and cause increased mortality rates, it also allows for the expression of other diseases such as Porcine Circovirus.

The negative impact of PRRS on herd health, performance and economics, could be alleviated if PRRS were eradicated; Dr. Julie Ménard and Dr. Peter Davies ask the question: is it possible to eradicate PRRS? If so, what and who need to be involved? These questions were tested by Dr. Ménard, a member of the North American PRRS Eradication Task Force, and Dr. Davies who conducted a pilot project in an isolated region of Minnesota to determine what is required to eradicate PRRS.

Dr. Ménard states that eradication is not an easy task; it requires a collaborative effort from producers, veterinarians, transporters and individuals associated with hog production. Ménard outlines three stages that exist in working towards PRRS eradication: biosecurity, disease stabilization and eradication. Eradication is a more challenging feat in densely populated regions and may only be achievable in isolated hog production regions.

PRRS can enter a production unit by a variety of methods including pig-to-pig transmission, transmission via people entering the production unit, contaminated material or transport vehides. To minimize the chance of PRRS entry to a production unit, adequate and continually practiced biosecurity is essential.

Biosecurity

A proper biosecurity plan must exist and be implemented in the barn. This includes, but is not limited to, the following procedures:

- obtaining gilts and semen from PRRS (-) herds
- having an isolation unit
- acclimatizing gilts entering a PRRS (+) herd (there are various strains of PRRS and combining two different strains can cause a more severe outbreak)
- having an all-in, all-out operation
- not mixing pig sources (sourced from one or two herds only)
- strictly enforcing biosecurity measures at all times

Once proper biosecurity measures are in place, Ménard suggests working with a veterinarian to determine the strain of PRRS that is in your barn to move towards disease stabilization.

Stabilization

Working with a veterinarian to continually monitor PRRS strains in a barn can give insight into whether incoming animals are bringing new PRRS strains with them. This is easier said than done as controlling PRRS in densely populated barn areas is more difficult than that in remote areas. Extra precautions such as intake air filtration systems may be necessary in densely populated hog production areas.

Eradication – maybe only possible in remote areas

Eliminating PRRS from a production unit is possible through practicing depopulation and repopulation, gilt acclimatization and roll over, as well as test-and-remove practices. Before implementing any eradication practices, it is essential to consult a veterinarian.

Regional eradication of PRRS – pilot project

Dr. Peter Davis and a group of researchers tested the theory of regional eradication by conducting a pilot project in an isolated hog production area in Minnesota known as the Rice County - an area isolated by natural borders and assumed to have a low prevalence of PRRS. It was here that the group discovered the practical challenges and factors involved in attempting to achieve successful regional eradication.

The lessons and challenges discovered included setting practical and feasible experimental goals, attempting to determine the initial PRRS prevalence, establishing the location of production units, obtaining participation from community leaders and finally, getting leadership from local veterinarians. Of these, the most important was producer interest and participation, often led by veterinarian involvement and the willingness of producers to share their barn's disease status.

The necessary ingredients to achieving success included having veterinary knowledge and leadership, proper diagnostics and sampling, assessing sow herd stability, understanding and teaching biosecurity practices and understanding herd closure. Their pilot project in Rice County achieved 90 per cent producer participation, however, they outlined that participation needed to extend to educate communities on biosecurity risk factors.

Future advances can be gained by having communication among veterinary practitioners, by creating a disease diagnostic database, having all veterinarians contribute data and monitoring the PRRS virus in barns.

Conclusion

By continually tracking the virus in barns, veterinarians can determine where contamination originates and work to prevent further contaminations. PRRS stabilization, and eventually eradication, is possible with a joint effort from producers, veterinarians, employees and all individuals entering production units. This is a feat that will not happen overnight but will require continual efforts from all the individuals involved. WHJ

Weight gain: an important performance feature in your swine production

The drive for healthier herd management will lead to dramatic increases in weight gain and overall performance. This drive starts with Dexafer 200™.

Iron deficiency affects most of newborn piglets. Anemia and reduced growth represent real and costly risks to your production. For protection against the negative effects of anemia, you must carefully select a reliable and proven product. Dexafer 200™ excels in preventing and treating iron deficiencies and anemia in piglets. Here is why.

20% Injectable iron dextran

Iron is a critical component in the synthesis of hemoglobin—itself an essential constituent of blood. Any significant decrease of hemoglobin levels in the blood could lead to severe anemia in the piglet... and in decreased production for you. More than half of the metabolic iron is concentrated in the hemoglobin. Experience has shown that a newborn piglet suffers two physiological drops in hemoglobin: the first in a 10-day period following birth and the second around the third week of life*.

Injectable iron dextran has revealed itself over the course of many years to be a proven and very efficacious way to decrease susceptibility to diseases and to improve weight gain. It protects against drops in the physiological levels of iron that impedes growth in piglets. 20% injectable iron dextran (**Dexafer 200™**) has shown its efficacy in restoring correct hemoglobin levels. Superior to other injectable iron products that contain only 100 mg (10%) of iron per millilitre, Dexafer 200™, thanks to its 20% iron dextran formulation, requires only one dose (between 1 to 3 days of age). A saving of time and money.

Iron-clad health

The piglet's birth puts in motion a metabolic free fall that depletes the required iron levels that sustain growth. If not controlled, this free fall could lead to severe anemia, to a slowdown in growth and even death. Restoring the metabolic levels of iron in piglets is crucial to the thriving vigour of your production. Never forget that as a producer you must make the right choices. 20% injectable iron dextran (Dexafer 200™) is an essential managing tool in your business and it will lead to iron-clad health for your piglets.

Weight gain: the facts

A recent independent trial[1] has shown the positive impact of Dexafer 200™ on animal health and on the overall performance of piglets. Let the numbers talk for themselves. Adding Dexafer 200™ (200 mg of 20% iron dextran) to your herd management regimen improves average daily gain by 31 g when compared to 10% iron dextran. Furthermore, weight gain is improved by +1.6 kg per piglet when compared to the control group. Dexafer 200™ compares favourably to other 20% injectable irons, showing for example slightly improved average daily gain compared to gleptoferron 200 mg IM (*see charts*). Prevention of iron deficiencies and anemia is thus highly effective at the recommended dose of 200 mg (1 mL) of Dexafer 200™ IM. Its effect on the health and overall performance of your herd is measurable: healthier, stronger, more resistant and heavier piglets. Dexafer 200™ provides the necessary intake of iron, optimizing weight gain[2], and practically eliminating the risk of anemia in piglets while helping you generate more revenues.

For more information on Dexafer 200™, do not hesitate to contact your local veterinarian.

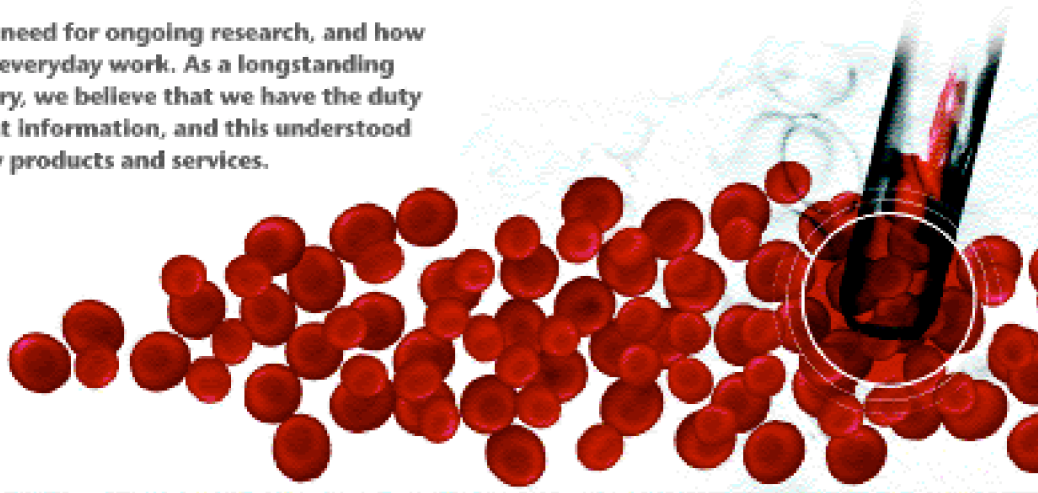
Dexafer 200™ is the first 20% injectable iron dextran presented in a virtually unbreakable plastic container

1 At birth, piglets show hemoglobin levels of about 100 g/L. The first physiological drop reduces this level to 80 g/L. If not corrected, this level will drop to 50 g/L in the third week of the piglet's life.

1 **Dexafer 200™ Technical Profile No. 1**. *Unpublished independent trial conducted in 2005 by H.J. Jones, M. Stevelos, DVM, W.R. Cox DVM, Dip. Path. Data on file with Vétoquinol Canada inc.*

2 Pollmann et al., **Journal of Animal Science**, volume 36, number 3, p. 640-644.

At Vétoquinol we understand the need for ongoing research, and how this may better guide you in your everyday work. As a longstanding leader in the animal health industry, we believe that we have the duty to supply you with the most recent information, and this understood as an intricate part of high quality products and services.



Dexafer 200™ increases weight gain by +1.6 kg per head

Dexafer 200™: very impressive results

Average Daily Gain

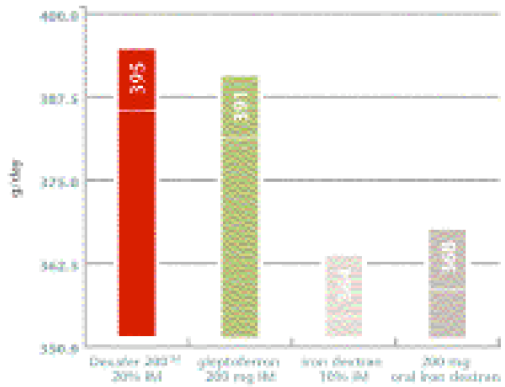


Chart 1. 200 piglets were randomly assigned to four treatment groups. Results of this independent trial[1] has shown an average daily gain (A.D.G.) significantly higher for iron dextran 200 mg IM (Dexafer 200™) and gleptoferron 200 mg IM (395 and 391 g/day, respectively) than for iron dextran 100 mg or iron dextran 200 mg orally administered (364 and 368 g/day, respectively). (n=188, p<0.01).

Piglet comparative weight gain

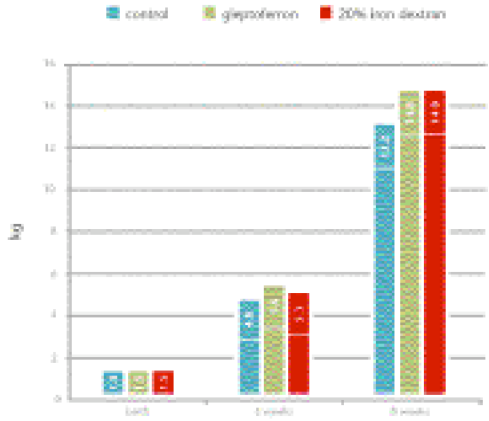


Chart 2. This chart illustrates the efficacy of groups receiving 20% injectable iron and 20% gleptoferron compared to control. It shows a significant result at 8 weeks of +1.6 kg per piglet in weight in favour of these groups.

Vétoquinol
a Sign of Passion

Dexafer 200™ iron-clad health

www.vetoquinol.ca

Integrated systems improve profitability

Summarized by Bernie Peet

APPLICATION OF AN INTEGRATED MANAGEMENT SYSTEM TO IMPROVE PERFORMANCE AND PROFITABILITY IN FINISHING PIGS

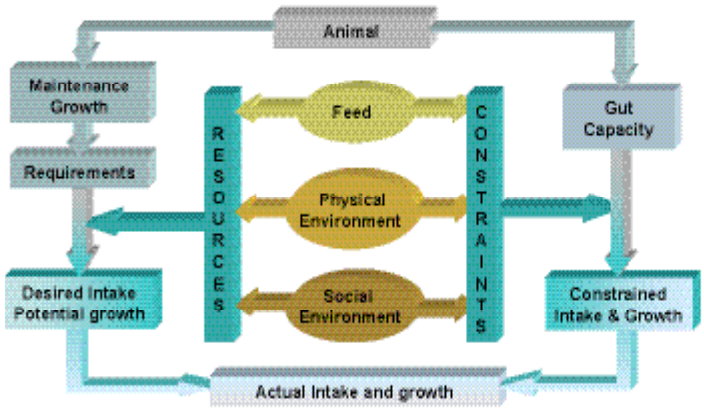
Neil Ferguson

Computer models that predict the response of growing pigs to nutrient intake, environment and management have been used for many years with varying degrees of success. Their use as part of an integrated management approach to predicting growth and feed intake significantly enhances the decision-making process, says Neil Ferguson of Nutreco Canada. It quantifies both the technical and financial outcomes to production stimuli and therefore eliminates the need for educated guesses. His paper outlines key components of an integrated simulation model called Watson® and how it has been applied in practice.

Watson® overview

Watson® was developed by integrating the science and practice of pig production into an easy to use Web-based software application. It has been extensively validated with over 20 trials conducted to test drivers and components of the model. Its framework is unique and flexible to allow the prediction of voluntary feed intake, as well as predicting performance and financial outcomes under commercial conditions. The key components of the model are summarized in Figure 1.

Figure 1: The framework summarizing the key components and processes involved in the Watson® model.



Applications

One of the main purposes of Watson® is to integrate the complex interactions between the animal, its environment and its diet into a management system that accurately predicts the animal's performance under commercial conditions, including cause and effect responses to any change in the production environment. Therefore, the application of Watson® provides solutions to a number of production, economic, and nutritional changes as well as assisting in the diagnosis of potential production problems.

Production changes and economics

Outputs from Watson® allow one to monitor current performances against expected performances and therefore identify periods of slower growth during, rather than after, the grower/finisher period. In addition, performances can be benchmarked against other producers or previous close-outs.

It can also simulate market performances for any predefined grading grid, including optimum solutions for individual producers and the financial implications of any production changes such as health, stocking density, nutrition and environment. Clearly, as feed and hog prices change, so too will the optimum marketing strategy for a producer. For example, the average hog shipping weight to provide the highest gross profit may be lower when feed prices move up and hog prices move down. The extent of the change will depend on the specific packer to which the hogs are being shipped. There are also opportunities to consider whether barrows and gilts should be shipped at different weights.

Nutrition

Watson® has the dual capacity to access and utilize existing branded products or perform least-cost formulations for individual customers based on the predicted nutrient requirements of their genetics, health status and their ingredients. With these features it is possible to 1) determine the optimum nutrient requirements based on the producer's economic or performance objective, for different nutrient density of the diets, and for different feed budgets; 2) minimize under and over-feeding nutrients; and 3) estimate the impacts of alternative technologies such as Paylean®. Of particular importance is the ability to define optimum feeding strategies based on current feed ingredient prices, as well as future ingredient prices. Therefore, responses in gross profit to changing energy density and/or the lysine:energy ratio of the diet can be predicted.

Nutritional or feeding management

A common question asked by producers is how many feeds should I be feeding in the grower/finisher phase and, if I use more than one, when should I switch feeds? The answers to these questions can influence the producer's gross profit and therefore a feeding budget can be designed and implemented to optimize the producer's objective (which could be either higher gross profits per pig or per annum, faster growth rates or best feed efficiency). Running a number of scenarios through Watson® will allow one to predict the optimum feeding budget based on cost versus nutrient requirement for any growth period. In addition, it is also possible to compare different diets and their effects on the performance objectives.

Manure management

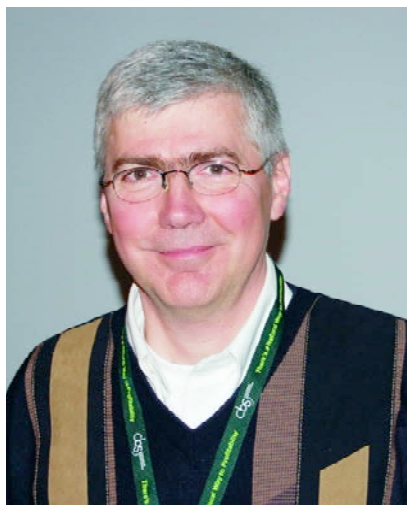
One of the consequences of being able to predict daily feed intake and lean tissue deposition is the ability to determine the amount of nutrient excretion, especially nitrogen and phosphorus excretion. For every simulation it is possible to determine the total amount of N and P that is excreted per pig per closeout period. Where N and P excretion is closely regulated, Watson® can be used to develop feeding programs, including diets and feed budgets that will reduce excretion of N and P. For example, moving from a 3-phase to a 5-phase feeding program can reduce N excretion by 50g/pig, which translates into a 135kg N reduction per year for a 1000 pigs per closeout barn.

Conclusion

The ability to make well informed economic decisions in a complex and constantly changing production environment is becoming increasingly dependent on the application of integrated management models. Watson® can dynamically assimilate the whole production process in order to predict the cause and effect responses to vectors of change within the commercial production environment. It also makes it possible to identify and solve production problems.

USING A BENCHMARKING DATABASE AS A DECISION-MAKING TOOL

Performance benchmarking has not been widely used in the nursery and grow-finish herds, but has huge potential to assist in identifying strengths, weaknesses and opportunities, says Michel Vignola of Nutreco Canada. It can help in analyzing problems, monitoring progress or assessing the results of a change in feeding or management. Most importantly, it allows producers to compare themselves with other



Michel Vignola

continued on page 50

similar systems. In his paper, Vignola describes how his company's benchmarking program, Compiporc®, can help to improve performance and profitability.

Compiporc® overview

Currently the Compiporc® database contains close-out data from 2000 onwards, which includes over 8,000,000 nursery and grow-finish pigs. It was originally used only in Quebec but is now available across Canada. For each batch of pigs, the information recorded includes details of pig weights in and out, entry and exit dates, diets used and amount fed, feed and medication costs, the pigs' environment, slaughter data and a range of other data.

Data can be sorted by: average daily gain, average daily feed intake, feed to gain ratio, mortality, entry weight and potential margin. Potential margin is a standardized calculation making all close-out comparable in time with standardized feed cost, fixed cost, pork price and adjusted performances. It attempts to quantify the gross profit of each close out. Although it has biases and limitations it can categorize the best and poorest performers as shown in Tables 1 and 2.

Each user can benchmark their own performances "on line and real time" with all other results entered in the database. Confidentiality of data is assured by allowing only the production data of an individual close-out to be used within the specific "domain" of the user. An individual client's data will be included in the whole database but results shown will only be for the specific client's domain. The comparative data shown depends on the client's choice of filters that are used to produce the report.

Various reports can be produced for Nursery and Grow-Finish including: a general benchmark report, a technical and economical report per period, a nutrient management report and a slaughterhouse report.

Table 1: Benchmark performance in nursery pigs (July 2005 - June 2006)

		Top			Bottom		
Selection	**All**	**10%**	**25%**	**50%**	**50%**	**25%**	**10%**
Number of close outs	1,511	173	397	746	765	412	193
Weaning weight (kg)	5.65	5.95	5.80	5.72	5.59	5.55	5.52
Days in nursery	49.1	45.8	47.3	48.1	50.0	50.9	51.1
Total number sold	2,610,972	256,970	650,921	1,306,914	1,304,058	651,579	259,672
Mortality (%)	3.96	1.67	1.92	2.20	4.50	5.83	7.99
End weight (kg)	26.00	27.78	27.56	27.04	24.95	24.46	23.59
Feed/Gain	1.49	1.40	1.43	1.45	1.53	1.56	1.59
Feed per piglet (kg)	30.33	30.67	31.06	30.95	29.71	29.54	28.75
A.D.G. (g/d)	415	477	460	443	387	372	354
A.D.F.I. (g/d)	618	669	657	643	594	581	563
Feed cost/piglet ($)	$11.88	11.95 $	12.00 $	11.97 $	11.79 $	11.84 $	11.72 $
Cost/kg of gain ($)	$0.58	0.55 $	0.55 $	0.56 $	0.61 $	0.63 $	0.65 $
Potential Margin ($/pig)	$4.48	6.14 $	7.09 $	6.18 $	$2.84	$1.56	-$0.21

Table 2: Benchmark performance in grow-finish pigs (July 2005 - June 2006)

	All	Top 10 %	Top 25 %	Top 50 %	Bot. 50 %	Bot. 25 %	Bot. 10 %
Number pigs sold	1,623,398	161,330	405,441	812,051	811,347	402,210	161,805
Number close-outs	1,661	159	405	802	769	389	170
Average index	108.38	110.38	109.57	109.51	107.25	105.75	103.94
Days on feed	103.1	97.1	99.0	100.5	105.7	106.4	106.5
Weight in (kg)	26.33	27.33	27.21	26.83	25.85	25.66	25.72
Carcass weight (kg)	88.67	91.83	91.28	90.45	86.70	85.54	84.51
Mortality (%)	6.78	3.17	3.84	4.65	8.83	9.70	10.65
Feed/Gain	2.64	2.46	2.54	2.58	2.71	2.74	2.78
A.D.G. (g/d)	815	895	873	854	778	763	749
A.D.F.I. (kg/d)	2.16	2.23	2.22	2.21	2.11	2.09	2.08
Feed/pig (kg)	222.19	216.12	219.43	221.65	222.73	221.82	221.79
Feed/pig ($)	$53.34	$55.21	$54.50	$54.54	$52.14	$51.69	$51.57
Cost/kg gain ($)	$0.63	$0.63	$0.64	$0.64	$0.63	$0.64	$0.65
Potential Margin/pig ($)	$10.17	$21.68	$18.86	$15.97	$4.36	$0.30	-$4.51

Nursery and grow-finish production

Comparison of the results from nursery systems with similar feeding programs highlights differences in various aspects of performance and identifies either improvement or deterioration in production parameters over time. With this information it is possible to analyze what are the actual reasons for success or failure and build a solid plan to improve or maintain performance and bottom line.

In the finishing herd a common question is: Does the use of Paylean® improve growth performance and provide greater profit per pig? For successful use of this feed additive, there are some unique nutritional adjustments that need to be made to the diet and additional management practices are required. Using the database in Compiporc® from Q3-2006 to Q3-2007, we extracted the results from those systems where Paylean® was or was not fed. It was evident that Paylean® improved the rate of gain and F/G when comparing pigs of similar start weight receiving a diet of similar energy density. Carcass weights were slightly higher in ractopamine fed pigs, which suggests that it is possible to ship heavier pigs in a similar grow-out period. Even after deducting the additional cost of the Paylean®-based diet, there was still a net economic advantage per pig.

Compiporc® is also able to extract performance data by sireline. These results clearly show differences between different sires. However, users should always be prudent when assessing such data because some results could be associated with the differences between production systems and, sometimes, management practices (pricing of feeds, etc.). To date, these types of results have been used to make genetic choices depending on the production context and targets for our clients. WHJ

Increasing success with foreign workers

Presented by Mark Chambers and Silvia Bégin
Summarized by Jodi Hesse, Alberta Pork

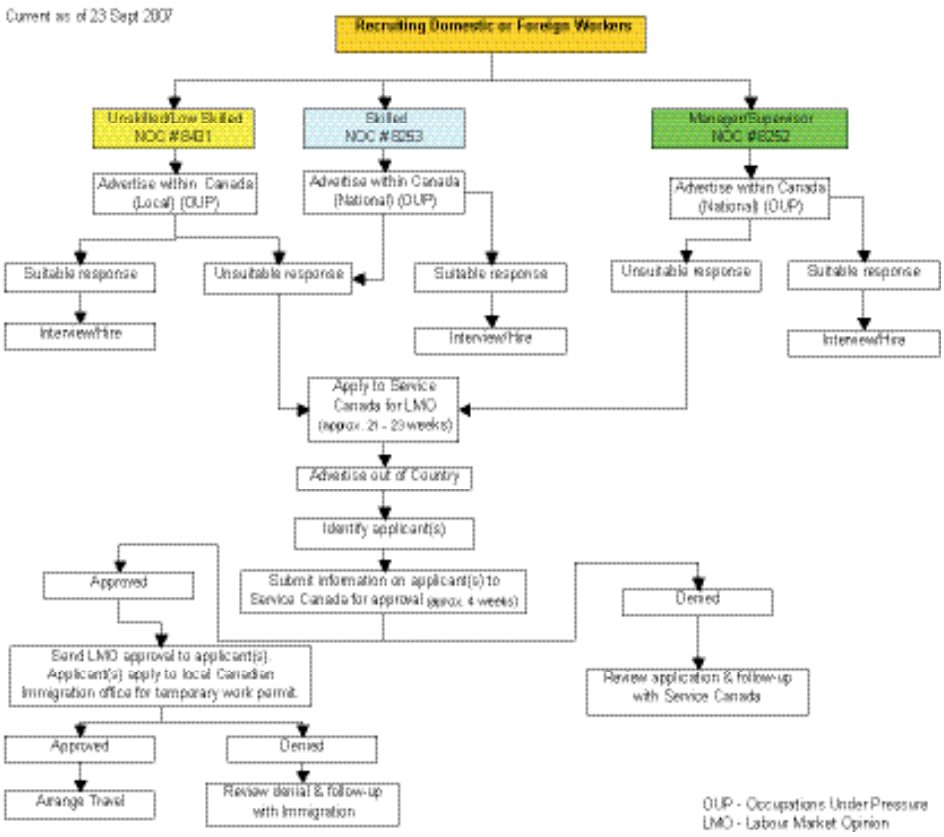
Alberta's booming economy has limited the availability of both skilled and unskilled labour, making staffing requirements a top concern of many industries including the primary agriculture sector.

According to the Alberta Employment and Immigration Industry's Labour Market Thermometer, if the unemployment rate is less than five percent, the demand for workers becomes greater than the supply. As of May 2007, the Canadian unemployment rate was at an all time low of 6.1 percent, with Alberta ranking lowest at 3.8 percent. The province's domestic labour supply can't keep up with the demand of available job positions, which means industries must search outside of Canada for employees.

Mark Chambers, production manager for Alberta at Sunterra Farms Ltd, and Silvia Bégin, an intercultural and international training consultant, spoke about ways that producers can increase their success with immigrant labour.

Chambers emphasised the process employers are required to go through when applying for or retaining foreign labour and the anticipated roadblocks and tips for making the procedure

Figure 1: Flow chart for the recruitment of foreign workers



continued on page 52

successful. However, Chambers and Bégin stressed that more than paperwork is required to make foreign workers a successful solution to the labour shortage. Additional challenges include a responsibility to fulfill the employee's basic needs once they arrive at their destination, as well as learning about cultural sensitivities that might lead to misunderstanding and frustration.

Pre-arrival requirements

Establishing the need to go beyond national boundaries for labour is the first step in recruiting an immigrant employee. Service Canada requires that the employer advertise the available position for a specified period of time prior to applying for the Labour Market Opinion (LMO). The LMO is the initial paperwork required by Service Canada. Industry has seen approval times for LMOs exceed 24 weeks.

Chambers shared his experience and tips on applying for an LMO, including the work undertaken by industry partners to develop a compensation grid for employment positions that provide some level of standardization of hog industry for Service Canada. This compensation grid can be found at www.albertapork.com

Tips for consideration

If applying for an unskilled worker, Chambers warns that there is special consideration required. The employer is required to find accommodation at no more that 30 percent of the employee's gross income and is also required to pay the return airfare. This isn't required when applying for a skilled worker.

Due to Chambers' previous history with foreign worker approvals, he suggests not indicating a language requirement on the LMO application for the processing officer in the overseas Embassy. Leave this decision to the employer during the employee's interview to determine if language is sufficient.

Make sure to send the applicant, with an offer of employment, to the Canadian Embassy in their country to apply for a work permit. Also, if the employee is flying through the United States en route to Canada, ensure all visa requirements are met.

The arrival

Once the paperwork process is complete and the foreign worker is on Canadian soil, Chambers says the challenges are not over. Many requirements need to be met to make the immigrant's introduction to Alberta successful. These requirements include:

- Finding accommodations with beds, bedding, furniture, cooking utensils, etc.
- Setting up bank accounts
- Applying for a Social Insurance Number and Alberta Health Care Insurance
- Setting up mail delivery
- Finding suitable transportation to and from work which may include applying for a drivers' license
- Setting up appropriate communication methods: phones, internet
- Showing where to find basic necessities such as the grocery store
- Farm training – dealing with language barriers; consider translating paperwork
- Integrating into the community and social activities

If the above requirements are met, it will help settle the new worker into the system, making their experience more successful.

Successful integration

Silvia Bégin cautioned that an employer should be aware of cultural sensitivities or differences and cultural adaptation stages to facilitate the successful integration of foreign workers.

Cultural value differences: It must be recognized that: (1) cultural differences exist; (2) all cultures are deeply engrained in the hearts, minds and behaviours of their members; and (3) no culture is superior or inferior to any other, they are just different. Key cultural value differences include; individualism vs. collectivism; egalitarianism vs. hierarchy; competition vs. cooperation; use of time vs. passage of time; and, change/future vs. tradition/past.

Perceptions: When working with other cultures that can have unfamiliar behaviour, Bégin recommends practising "ODIS"

O – Observe, D – Describe, I – Interpret, S – Suspend judgment

Bégin says practising the ODIS method increases awareness of our own cultural values and assumptions, and allows us to better understand and appreciate other cultural perspectives.

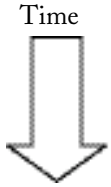
Communication: Be aware that 70 percent of interpersonal communication is non-verbal, only 30 percent of what is communicated in a conversation is verbal. Interpretation can vary by culture on how we use: our voice (tone, stress, speed); gestures and posture; our eyes (indicating turn-taking, threats, propositions); space (proximity); touch (frequency and nature); and time (importance of punctuality).

For example, in North America, a common gesture of good luck is to cross your fingers. But, this can mean many things in other cultures including protection, friendship, break friendship, to hide, cancel a lie or even a sexual insult.

Cultural adaptation & culture shock

Cultural adaptation is a process not an event; it is about two cultures interacting with each other. According to Bégin, both the foreign workers and the hosts need to participate in this process. Stages of cultural adaptation over time include:

- Entry into new culture
- Culture fatigue and stress
- Culture shock
- Partial adaptation
- Lessened culture shock
- Full Cultural Adaptation



Culture shock is defined as a state of loss and disorientation precipitated by a change in environment that requires adjustment. It results from confronting values different from our own, and from the loss of familiar network and environment.

Silvia Bégin states that support for overcoming culture shock may include encouraging extra rest, involvement in recreational activities of interest and regular interaction with people from the same culture and/or language if possible.

Practical tips for helping foreign workers integrate into the workplace

Upon hiring and before departure:

- Provide as much information as possible in advance in the language of the worker, including employment contract
- Provide information on climate, community and region as well as what to bring

Upon arrival, provide thorough orientation and training to all aspects of the workplace; do not assume they already know. It is best not to take anything for granted and to give concrete examples. A few of the examples given by Bégin include:

- Fully describe the workplace, location and use of equipment, safety and emergency procedures
- Have all important documentation, signs, operating manual, etc. translated into the language of workers
- Label items in the workplace
- Describe workplace culture and define working conditions
- Review remuneration details
- Prepare local workers for arrival of foreign workers and implement a buddy/mentor system
- Show interest, speak slowly and listen patiently

Geographical orientation can include providing maps of the town and region plus explaining important city/town bylaws.

Like Chambers, Bégin recommends a tour of town to find basic amenities like medical facilities and the bank, plus an introduction to community programs and activities.

Permanent residency

There are basically two ways a foreign worker can obtain permanent residency status. The first is to apply to Citizenship and Immigration Canada as an individual or family. The time frame for this is approximately two to six years. Secondly, the employer can sponsor the individual through the Provincial Nomination Program. The time frame for this is considerably shorter at six to 18 months.

Conclusion

Without the ability to alleviate the labour shortage in Alberta, the demand for foreign workers will continue to increase over time as this shortage is felt across all Alberta industries, not just agriculture. The industry must go beyond successfully obtaining foreign workers; focus also needs to be on keeping the immigrant labour in this sector.

Pig production and climate change

Summarized by Bernie Peet

CLIMATE CHANGE SCENARIOS FOR THE PRAIRIES

David Sauchyn

Global warming will have a significant impact on water resources in the Prairie region, resulting in longer, dryer summers, a reduction in snowfall and increasing soil and ground water deficits say David Sauchyn and Suzan Lapp of the Prairie Adaptation Research Collaborative at the University of Regina. Higher average temperatures and lower precipitation will require agriculture, and society, to adopt new water conservation and management measures.

Introduction

Climate change, and its impacts on natural and human systems, is the subject of intensive worldwide investigation. As a result, a large body of knowledge has accumulated, such that there is a reasonable understanding of the direction of climate change and potential impacts for most regions of the world. There are, however, few cases of the use of this information for modifying practices and policies to minimize the adverse effects of climate change.

In late 2007 and early 2008, the Government of Canada released the 2nd National Assessment of Climate Change. At the provincial scale, the government of Alberta has undertaken an evaluation of vulnerability to climate change, beginning with the construction of a new set of climate change scenarios and the assessment of the potential impacts of these projected changes on ecosystems and water resources

The impacts of this warming in the Prairie Provinces on water resources are likely to be:

- a shorter winter and longer drier summer
- decreasing trends in spring snowmelt and annual stream flow, with reductions in snowfall and higher temperatures in winter
- increasing soil and surface water deficits as more water is lost by evaporation and transpired from plants in summer, than is gained by the extra precipitation in winter
- increased climate variability, and therefore droughts of longer duration and greater frequency, as well as unusual wet periods and flooding

Climate change scenarios

To demonstrate the pattern of global warming expected for the southern Prairies, we derived climate change scenarios. We chose southern Alberta to illustrate the projected changes in temperature and precipitation, because this region includes the Rocky Mountains, the main source of water supplies, and the plains, where communities and agriculture create the demand for water.

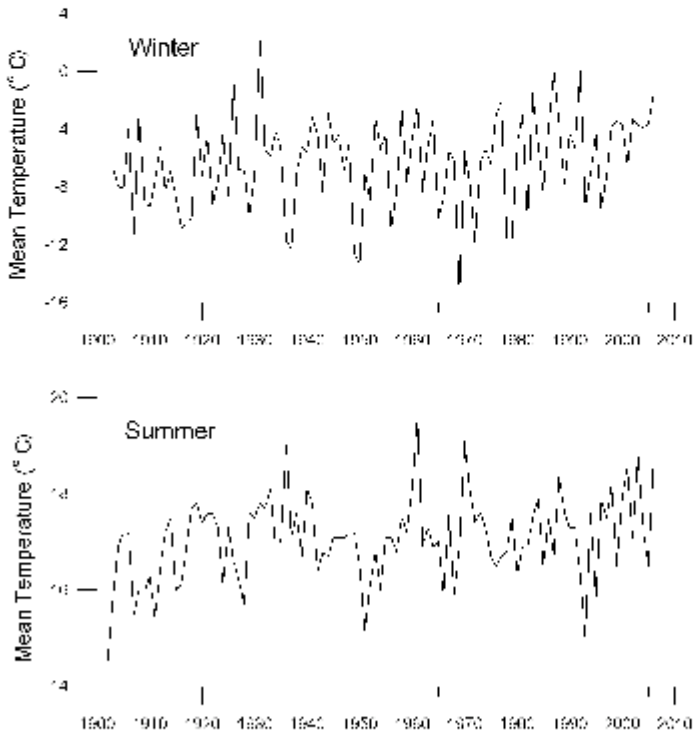
A climate change scenario is a plausible change in climate variables between a 30-year baseline period, usually 1961-90, and a future 30-year time slice (e.g., 2040-69; the "2050s"). Climate change is expressed as the difference between 30-year means because the climate of specific years cannot be known, only climate tendencies. In fact, every run of a global climate model (GCM) produces a different future climate.

The climate change scenario projects median increases of about 2.5° C in temperature and 15% in precipitation for southern Alberta by 2040-69 relative to 1961-90. As important as the projected annual changes is the shift in seasonal distribution since it will determine, to a large extent, the effects of higher temperatures and precipitations on agricultural production, ecosystems and water supplies. The scenario shows that future temperatures are higher in every season. Precipitation, on the other hand, is higher in winter, but unchanged in spring and fall.

continued on page 56

An increasing proportion of the extra winter precipitation will fall as rain versus snow. Furthermore, most models project decreased summer precipitation relative to 1961-90. This shift in the seasonal distribution of precipitation is one of the most important and consistent scenarios for the western Canada.

Figure 1: Mean winter (top) and summer (bottom) temperatures at Lethbridge, 1902-2006. *Temperatures in both seasons display an increasing trend in recent years, but the upward trend in winter temperatures has been more consistent, extending to 1970 and consistently high for the past 10 years.*



Global climate models (GCMs) are the only credible tools currently available for simulating the response of the global climate system to increasing greenhouse gas concentrations. They simulate the mechanics and forcing of global climate. At Lethbridge, weather has been observed since 1902. Figure 1 illustrates that since about 1970 winter temperatures have risen steadily and remained relatively high for the past 10 years. Summer temperatures (Figure 1, bottom) have increased more recently and with greater inter-annual variability. Thus the recent temperature trends at Lethbridge coincide with the scenarios from GCMs. There are no obvious trends in precipitation; the increase projected by GCMs is relatively small compared to the large variability between seasons and years. The more revealing water records are of stream flow and lakes levels, since they reflect the water balance and not just inputs of water. Declining levels of many prairie lakes and streams can be linked to longer warmer summers, and the seasonal shift in precipitation described above.

The response: adaptation

Crop and livestock production has been sustained for more than 100 years in the Prairie Provinces, near the climatic limits of North American agriculture, through a continuous process of adaptation to a dry climate, large climate variability and extreme weather events. This resilience and history of adaptation is good preparation for the regional impacts of global warming, but the sector and producers will be challenged by a shift in the distribution of water over time and space that could bring conditions that are outside the range of those previously experienced by at least the last two generations of prairie farmers and ranchers. The most challenging scenario is droughts of a severity and duration that exceeds the worst droughts since the plains were settled by Euro-Canadians, but occurred in paleoclimate records. This would force producers to consider new technologies and management practices.

There is also an opportunity to take advantage of the shorter winters and longer frost-free season provided that water supplies are sufficient to sustain production. Thus, much adaptation will involve the improved conservation and management of agricultural water supplies. Supply management could involve both engineered on-farm water storage and restoration of the storage capacity of wetlands and riparian ecosystems.

While most adaptation will be adjustments in structures and practices on farms and in communities, this must be facilitated and coordinated so that the implementation is efficient, effective and equitable. This is the role of government and industry. These formal institutions have an important responsibility in terms of policy, legislating, rewards and disincentives; however, less formal institutions and social networks, like producer associations, have an equally important role to play in raising awareness, sharing information, and encouraging changes on farms and within communities.

CARBON OFFSET MARKET OPPORTUNITIES FOR PORK PRODUCERS

In response to the requirement to reduce greenhouse gas emissions, systems for quantifying and verifying the effects of changes to technology and management that can generate carbon credits are being developed. And, while the mechanisms for trading credits are still in their infancy, there are opportunities for producers to participate in the market, says Karen Haugen-Kozyra of Alberta's Climate Change Central.

Karen Haugen-Kozyra

Alberta's regulatory framework

On July 1, 2007, Alberta launched North America's first regulatory framework for managing Greenhouse Gases (GHGs). Controlling these emissions is a priority because Alberta has the highest GHG emissions of all Canada's provinces and territories. The framework requires large industrial emitters to reduce emissions by 12 per cent annually. This is over and above the 15 per cent emissions intensity reduction that Alberta has already achieved since 1990, through the 2002 Climate Change Plan.

These large industrial emitters are mainly power plants, oilsands facilities, gas plants and manufacturing facilities. The primary agriculture sector is not included in the regulations. The framework also includes an Alberta-based carbon credit system, which gives Albertans the opportunity to voluntarily develop carbon/GHG-reducing projects that can be sold as offsets in a carbon market, one of the options available to the large emitters.

The regulated companies can meet their targets through three options:

- ***Emission Performance Credits*** – make improvements in their operations to reduce their emissions;
- ***Fund Credits*** - contribute $15/tonne into a fund for every tonne they're short (this will be re-invested in technologies to reduce emissions); and/or
- ***Offsets (carbon credits)*** - offset their emissions by buying carbon credits from Alberta-based projects on the Alberta Carbon Market.

The penalties for being out of compliance are steep - $200 for every tonne short of their target, and fines for failing to comply of up to $50K for an individual or $500K for a corporation.

Alberta's new carbon market – core elements

This framework essentially establishes the core elements for a new, environmental market to function – market supply and demand, market rules established by the Alberta government, market tools and consequences for non-compliance. The role of government in this market is to set the above elements of the system, and enable the private sector (buyers and sellers) to develop and trade this new environmental commodity.

In North America, voluntary Carbon markets exist, like the Chicago Climate Exchange in the US, but due to their

continued on page 58

voluntary nature, the price of carbon is much lower as companies learn about the trading process (price averages between USD $3 and $3.50 per tonne). Other compliance-based carbon markets are being developed in North America, but are likely several years from implementation. A national system is in the works for Canada and the Alberta market is well positioned to be consistent with that system because Alberta's market is based on international standards of greenhouse gas quantification.

Market supply – opportunities for agricultural producers

Choosing to participate in the Carbon Market is a voluntary choice for pork producers. A carbon offset, also called a credit, is created when a reduction in GHG emissions results from undertaking a project - changing a practice or installing a technology or control system to reduce emissions or store carbon in soils. In a project-based system, the amount of GHG emissions on the farm is calculated before the practice/technology is implemented and this is known as the 'baseline'. Then, emissions are calculated after the practice is changed. The difference between Baseline and Project emissions equals the 'credit', measured in tonnes of emission reductions.

Quantification protocols

Quantification protocols are standards that define the supply of credits resulting from the change in practice or technology. They provide quality assurance, thereby reducing the risk and cost for buyers and sellers. They also help to keep verification costs down.

The protocols basically define which practices and technologies count (i.e. where enough science exists to determine the reductions in methane, carbon dioxide and/or nitrous oxide – the 3 GHGs pertinent to agricultural projects), record keeping information, and calculation of the carbon credits. To date, over 14 government-approved protocols exist for the Alberta market, and nine are relevant to agriculture.

All the protocols require that the credits result from a change in practice, technology or system occurring on or after January 1, 2002. Providing the Project meets the requirements set out by the regulations and the Protocols, producers can go back to 2002 onwards to package their credits for market. There is no deadline to sell these 2002 onward credits so producers can choose to undertake a Project at any time and still sell these past credits to interested buyers. However, a major challenge to selling credits from one farm is that Buyers are looking for large packages of tonnes, upwards of 50 to 100,000 tonnes. Therefore, many producers are choosing to participate in the market through contractual agreements with 'aggregators'. Aggregators are companies that bring together the carbon credits from many individual farmers so that the total quantity of credits is large enough to interest large emitters in a purchase. Currently there are over 12 aggregator companies active in Alberta.

Early days - early market

These are early days for the Alberta Carbon Market and there is much interest in the agricultural sector as a source of carbon credits. However, Alberta's carbon market is still in its infancy and will likely develop in the short-term with all of the attendant risks of emerging commodity markets such as little price discovery and low liquidity.

For the next year or so, it will likely be a bilateral market, until a National Offset system is in place and the supply broadens out, exchanges move in and provide the transparency and price discovery. Within a few years, a North American-wide market is likely, and the value of carbon is expected to climb. The Alberta system will harmonize with the National system as early as the latter half of 2008 (barring a federal election).

A further consideration for producers in the Alberta market is the price of carbon - essentially capped at $15/tonne (inclusion of a technology fund credit compliance option). Where market interest in carbon offsets exists, by all accounts, it is likely going to be at a price below $15. A solid business case for undertaking a practice change or installing a new technology is important – revenues from the sales of carbon credits will likely help offset some of the costs, but it won't be a cash windfall.

The best option for producers right now is to get informed about the requirements of this emerging market. They need to understand where the demand for offset credits will come from; current and future scenarios for market activity; what the government-approved protocols are all about. Asking a lot of questions and doing due diligence on companies and contracts you are considering partnering with, is essential. Make sure you understand and are comfortable with any contract before signing it. Like any other commodity market, to really understand it the best way is to trade a little bit and see how it works out.

WHJ

Turning loose on sow housing

Summarized by Cathy Peet

Loose housing for gestating sows has been widely used for over twenty years, especially in Europe where legislation bans the use of conventional stalls from 2013. The VIDO Swine Technical Group has started to produce information for pork producers and their objective is to assemble a review that pork producers can use when considering a change to loose housing, says the group's chairman Lee Whittington. He explains why there is now increasing interest in group systems in North America.

Some of the main motivations behind changing to group housing are:

- Enhancing animal welfare, or appearance of welfare - studies have shown that after a certain amount of aggressive behaviour at first entry to the group system, overall there is much less aggression in group systems than in stall systems.
- Improving sow health/productivity with exercise – it has been shown that animals getting regular exercise have higher numbers born alive, greater litter weights and fewer stillborn piglets. Exercised animals also had greater bone density and bone breaking strength.
- Serving a specialized market – several retailers are introducing new branded products that will require producers to make alterations to their production systems within the next few years.
- Meeting present or future legislation requirements – legislation in several countries requires that animals be given more freedom of movement and greater space. Pressure will mount in Canada for similar actions to take place and producers that are pro-active will reap the benefit.
- Staying current with industry trends - the trend around the world is towards group housing and North America is no exception as evidenced by Smithfield Foods and Maple Leaf Foods announcements that they will transition to group systems by 2017.

LOOSE HOUSING WITH ELECTRONIC SOW FEEDING

Electronic sow feeding (ESF) is one of the most widely used loose housing systems in Europe. Alberta Pig Company (APC) has been using the system on two units - a 2600-sow unit built in 2001 and a parity-segregated gilt production unit with 1800 gilts and sows, which was built in 2004. APC's production manager, Tony Nicol, who is also a member of the VIDO Swine Technical Group, shares the company's experiences so far.

In an ESF system, each sow carries a unique electronic identification tag that allows it to enter the feeder, access a pre-determined amount of feed and exit the feeder without disturbance from other animals. Once the sow has left the feeder, the rear gate re-opens to allow the next sow in. The computer controlling these processes can be programmed to vary timings and amounts of feed delivered.

The design objectives for the APC barns were as follows:

- Same cost as a conventional stall unit
- Same level of production or better
- Greater longevity for sows
- Obvious improvement in sow welfare

The design included a combination of stalls for sows from weaning up to 28 days gestation and group pens from 28 days until just before farrowing. Straw bedding was used and boar and hospital pens were included in the design. Some of the reasons behind this design were:

- Stalls give the necessary individual attention at critical periods post weaning and post breeding.
- "Static" groups of sows (ie. no additions to the group after entry) lead to less aggression
- ESF allows "true" individual feeding
- 65-70 sows/group maximizes the use of the expensive ESF feeder
- Straw based systems give greater comfort over concrete only systems
- Straw gut fill increases contentment and reduces aggression
- Straw increases gut capacity and therefore helps lactation feed intake
- The close availability of hospital pens for disadvantaged animals is essential so they can be removed from the group quickly to ensure they receive adequate feed and water.

Gilt introduction and training

For training purposes an ESF feeder is located between two gilt pens. Initially it was thought that during training the ESF feeder should be operated in its fully automatic mode but gilts were afraid of the enclosed feeder and the noises associated with the opening and closing of the gates. Manoeuvring animals into the feeder and waiting for them to eat was very labour intensive and time consuming. Trial and error showed that the best way of training the gilts was to hold the animals in one half of the pen and leave the entry gate open, the feed trough door open and part of the exit gate open for the first week to allow gilts to acclimatize themselves and get used to going through the feeder.

Gilt breeding

After training is complete, gilts are heat detected twice-daily using V-boars that are taken into the group pen. Gilts standing to the boar at the heat check are removed to stalls and bred. Average age at breeding is 210-220 days with a target weight of 135kg. Gilts are moved to the gestation pens in groups of 70 after pregnancy testing and are introduced to the fully automated ESF system. Because of the training few problems are encountered and gilts are pregnancy-tested again and vaccinated while in the group pens.

Pen layout

Each pen has three bedded lying areas with a fully slatted dunging area to the front. The lying area is 14" below the level of the slats to allow for bedding to build up in depth and reduce its dispersal over the slats. The lying areas are cleaned out after removal of gilts to farrow.

Manure management

Solid manure disposal and straw handling is carried out using a Bobcat When slats are combined with straw there is a choice between sluicing recycled slurry or using a scraper system. Sluicing down works well if done routinely every second day otherwise the channels may get blocked with straw. Scrapers can be used but if there is a breakage under the slats it becomes a major problem to repair.

Straw or no straw ESF systems

EU legislation already states that straw or roughage must be available to sows on a daily basis. Although there is no legislation in North America it is likely to become an issue with consumers and retailers in the future so should be taken into consideration when selecting a system. Low-straw systems are commonly used in Europe. The buildings are insulated and may also have under-floor heating in the lying areas.

Dynamic or static groups?

A major decision to be made is whether to have a "dynamic" or "static" ESF system. In dynamic systems, bred sows are added to the group each week, which is likely to increase the level of aggression. In static groups sows are all at the same stage of pregnancy and stay together in one group. As each feeder can only accommodate a maximum of about 70 sows producers with less than 700 sows are more likely to use a dynamic system in order to fully utilize the feeder.

Group housed gilts at APC's Paradise Valley unit

continued on page 62

Strengths and weaknesses of ESF loose housing

Strengths

- Sows remain productive longer because muscle tone is maintained
- % born dead is reduced
- Little fighting after the initial aggression at entry
- Individual feeding to condition and size
- Minimal feed wastage
- Sows are more docile and easy to handle
- Better conditions for staff to work in
- Output can be equal to, or greater than stalled systems

Weaknesses

- May get dunging in lying areas (straw based)
- Need higher degree of stockmanship
- More labour intensive
- Competency with computer software and electronics is necessary to run ESF
- Bio-security may be compromised when using straw (mice in bales)
- Most ESF systems are from European manufacturers and service and/or spare parts may be lacking

Table 1: Sow production in loose housing compared to conventional stalls, to end August 2007

	Paradise Valley Gilts only	Lewisville Sow unit	Poundmaker - conventional stalls
Born alive/litter	11.5	12.5	12.2
Farrowing %	87	87	90
Weaned/sow/year	Gilts only	27.3	26.9

From: Alberta Pig Company

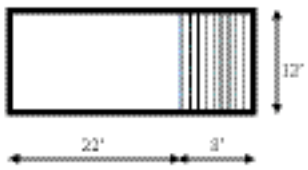
Summary

ESF is a proven method of loose housing of sows that has been developed over the last 20 years plus. It provides a substantial improvement in welfare and productivity figures can be equal to or better than stalled systems. However it is more labour intensive, is more reliant on complex electronic and mechanical parts and needs active preventative maintenance and daily checking.

In the 1990's, when 3-site production was introduced, many farrow to finish operations in Ontario changed to farrowing-only systems and finishing barns were converted to group housing for gestating sows. Conversion to floor feeding required a minimum amount of alteration and made use of existing equipment, explains consultant Franklin Kains. There are many permutations for group pens with floor feeding and he describes some of the layouts in use.

Pen layouts

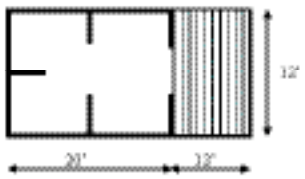
Figure 1: Simple pen layout



- Similar to conventional slatted floored pens
- Feed dropped on solid floor from overhead auger
- No added protection for sows from fighting

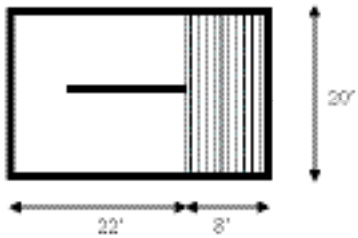
There is more aggression in the Figure 1 layout as there are no stub walls to divide the pen into sections giving pigs no means of escape from more dominant animals and only the one feeding zone. In Figure 2 where stub walls have been fitted less aggression would be observed as there is more interest for the sows in the pen with the different zones.

Figure 2: Pen with half walls



- Layout adds short stub walls extending out from front of pen and side walls
- Creates 4 feeding zones to reduce conflict at feeding
- Also adds more wall length for sows to lie against

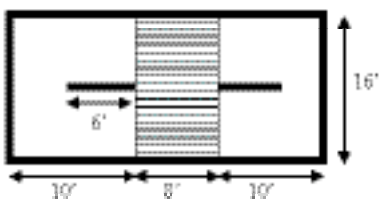
Figure 3: Pen with central wall



- Central wall provides some visual protection for sows
- Wall stands alone in the pen to avoid dead ends for sows fleeing aggressors
- Central wall can be a piece of rubber belting hanging from ceiling which would be softer and may lead to less injury than a concrete barrier

The style of pen in Figure 3 could be used as a mixing pen as sows have plenty of lying room and free movement to avoid aggression. Only one or two pens need to be like this and pigs could be moved on to a simple pen layout after acclimatization. In some finishing barns, especially many of the older ones, it is more convenient to have the alleys on the outside and the slats in the middle of the pen as in Figure 4.

Figure 4: Pen with slats in middle with 2 central walls



- Slats in the middle of the pen with feeding floors at either end
- Central wall added to both feeding areas to split up both and add wall length
- Feed not necessarily dropped simultaneously but on one end first to attract the aggressive sows
- Non-aggressive sows hold back and then go to other end when feed drops 15 seconds later
- Natural separation of aggressive from non-aggressive sows

Floor feeding system in a converted sow stall barn (photo courtesy Franklin Kains)

Floor slopes

Solid floors must be sloped towards the slats to get urine to drain off quickly. If liquids puddle in the lying area it will encourage dunging. Floors should slope 5%. A step down from the lying area to the slatted area of 2" will encourage manure to stay on the slats.

continued on page 64

Slatted floors

8ft of slatted floor width is a good width to keep sows clean. Any less and there will be some risk of manure on the solid floor. Slot width should be 3/4". The gap at the end of the pen next to the outside wall is prone to manure build-up and a gap of 2" between the last slat and the wall will help keep this area manure free.

Area for sows

A large feeding floor reduces competition for feed. However, too large a lying area leads to dunging on the solid floor. Common practice has been to allow 12 sq.ft. to 15 sq. ft. of feeding/lying floor.

Feeding and drinkers

Maximizing the area that feed is spread over will reduce fighting at feeding time. This will most often require two feed lines. Increasing the spread can involve adding a feed line, adding more drops or adding elbows to the end of selected drops to redirect the feed horizontally. Drinkers are set over the slatted area with one per 10 sows being the most common.

Other group housing methods

Other methods of feeding in loose housing systems are not as common as ESF and floor feeding. Their strengths and weaknesses are summarized below:

Feeding stalls

Strengths

- Maintain individual sow feed intake control
- No competition at feeding time, safety for sow
- Accommodates slow eaters
- Learning period for sow and stockperson minimal
- Maintains individual sow observation once a day
- Can accommodate new entries weekly
- Straw or liquid manure
- No electronic components to breakdown

Weaknesses

- Increases space requirements by adding feeding space to pen loafing space
- Cost of free-access stall is double gestation stall ($300-$400 vs $180-250)

Cafeteria feeding

Strengths

- Maintain individual sow feed intake control
- Provides safety for sow during feeding
- Accommodates slow eaters
- Allows for daily inspection of individuals at feed and in movement

Weaknesses

- Requires skilled staff to move sows
- Potential injury during daily movement
- Staff time for feeding activity is significant

Trickle feeding

Strengths

- Maintain individual sow feed intake control through biofixation on feed delivered at 100 g/min
- Partial protection of sow at feeding
- Observation of individual sow at feeding possible
- Economical space by making use of pen space for feeding space

Weaknesses

- Does not ensure individual feeding levels
- Does not accommodate slow eaters
- Minimal protection for each sow at feeding time
- Up to 10% will leave the group unable to compete

CONTINUED

Where in the world to grow pigs

Presentations by Fiona Boal and Steve Meyer
Summarized by Jeff Melchior, Meristem Land and Science

Fiona Boal

Growing global affluence will likely mean growth opportunities for the world's pork producers – the question is where.

Open any magazine or watch any television news broadcast today and it's not hard to see that the face of the world's economic landscape is changing. Darkening clouds are looming over long-standing economic powers even as many of the formerly poor cousins in the world's economic family rapidly gain profile.

If history is any indication, growing prosperity has traditionally gone hand-in-hand with meat consumption. The question for pork producers today, say two leading analysts of the global pork industry who spoke at the 2008 Banff Pork Seminar, is where in the world to find these opportunities.

"For Canadian hog producers, gaining an appreciation of the global pork market, especially the emergence of new hog production regions, is key to assessing the future profitability of the industry," says Fiona Boal of Rabobank International, the world's largest food and agribusiness bank.

"We've already seen significant shifts in where pork is produced with significant declines in production for the EU-25 and dramatic gains for China. How and where a handful of animal protein multinationals choose to make investments will determine which new pork production regions emerge to challenge traditional exporting countries such as Canada."

Meanwhile, the pork market in North America is currently in rethink mode, says Steve Meyer of Paragon Economics in Iowa. The U.S. is likely to remain a major player in the world pork market as long as key factors, such as a strong export market for corn, remain in place, he says. At the same time, U.S. producers face many of the same challenges as their Canadian counterparts, such as policy direction and the changing world energy situation.

"The bottom line is, I think we will always grow pigs in the U.S. and Canada," says Meyer. "I'm pretty confident of that. As a pork economist I don't think I'm going to be out of a job very quickly."

Steve Meyer

The U.S.

In many ways, 2007 continued a winning streak for U.S. pork producers and exporters, says Meyer. Although an unprecedented period of profitability was broken, domestic demand has been strong. Slaughter capacity, in spite of losing a plant in 2007, continues to gain momentum. And even though the rise was not as significant as in recent years, 2007 also saw the continuation of the year-over-year surge in exports that has caused U.S. exports to rise almost 75 percent from 2003 to 2006.

The U.S. is also witnessing the demise of the over 200-year-old U.S. hog cycle, which has traditionally seen prices increase for two years and then decline over the following two years. "There is little on the horizon in this high-investment, climate-controlled, high fixed cost industry that would make the revival of the cycle probable," says Meyer. "Most producers have little or no debt and some have sizable cash reserves. Many bankers believe U.S. producers have considerable staying power should cyclical losses be longer than usual."

Not surprisingly, perhaps the biggest challenge to the U.S. pork production community is ethanol. "Corn availability could well become an issue for industry expansion. Ethanol is not waning yet and U.S. policy protects it very well," says Meyer. "However, many grain farmers are starting to question the wisdom of using corn for ethanol instead of feed for pigs simply because ethanol doesn't produce the valuable crop nutrients found in manure."

But all is not well in ethanol land, he says. "Higher corn prices and larger ethanol supplies are squeezing profit margins

enough that several small plants have ceased operations and plans for two plants have been scrapped."

The demand for ethanol begs the question of whether the U.S. and Canada will be able to remain competitive in the world pork market. Although he believes ethanol will put a pinch on the market, Meyer says they will remain competitive as long as the U.S. remains an exporter of corn – a likely scenario as few countries are able to replace the over two billion bushels of corn the U.S. produces every year.

"Whatever the corn price is in North America, that sets the price of feed and feedgrains throughout the world, so if feed prices are high for the U.S., they're high for everyone," he says. "I think the chances are very good that North America, and the U.S. in particular, is going to remain an exporter of corn, thus providing us, generally, with a feed cost advantage against other pork producers in the world."

China

China is, without a doubt, the hottest topic in any of the commodity markets. At the same time, the country's high level of government secrecy makes it difficult to gather accurate data, so in many cases a picture of China's pork market is a best guess affair.

What we do know, says Boal, is that inflation in China is driving up domestic food prices and the country is looking for cheaper meat protein alternatives. In November 2007 the overall consumer price index (CPI) rose almost 7 percent, a record high for the past decade, driving up food prices as part of that CPI a staggering 18 percent over the previous year, while pork prices jumped 56 percent year on year.

The question is whether Chinese consumers will forego their general preference for fresh meat and consider imported frozen pork as a more affordable alternative, says Boal. One challenge to this is the poultry industry, as Chinese consumers turn to cuts such as leg quarters because of their affordability.

Another potential challenge is government policy, she says. "What we need to understand about China is that food security transcends economics. We have seen this in markets before, such as in Europe post-World War II as well as in the former Soviet Union. When it comes to food security, the rules of economics do not always apply."

A contraction of the domestic pork supply in China in recent years will also play a role. Although analysts are unclear as to the extent of this contraction or exactly what's causing it, Boal says it is generally agreed that three key factors have played a role: disease, high feed costs, and structural adjustment.

"Blue Ear Disease," thought by some to be Porcine Reproductive and Respiratory Syndrome (PRRS), is said to have cut the Chinese herd anywhere from a million sows to 20 percent of the herd. "Whatever (the disease) is, they don't have it under control," she says.

High feed costs caused smaller farms to cull breeding stock starting in 2006. In the process, the hog-to-corn ratio, a measure

continued on page 68

of profitability, fell dramatically. Although profitability has risen since 2006, Boal says the fact remains that an untold amount of breeding stock was culled in the process.

Finally, a movement from backyard hog operations to larger, more integrated models has not been without its share of growing pains. In 2001, 74 percent of the hog farms in China had less than 50 hogs. By last year, only 42 percent were a part of that category. "As (integration) happens, it takes time for integrators to catch up in terms of production levels," says Boal.

So is China, as the saying goes, the "saviour" of the Canadian pork industry? While there are opportunities for export of Canadian pork to China, Boal says competition from other countries and commodities will be fierce. "At least in the next year or so, China needs meat. They'll need to import meat even if it's not their preferred solution."

Russia

Traditionally one of the world's largest importers of meat, Russia is also a very large producer, says Boal, with production expected to double between now and 2012. Combined, it has created a fickle market. Meat prices have increased significantly in recent years, attracting exporters but driving government intervention. The bottom line, says Boal, is that Russia appears determined to reduce its dependence on imports with a high degree of investment into the domestic pork market along with aggressive production targets.

Mexico

Hit hard by high feed prices, low producer prices, and competition from the U.S., Mexico has seen many smaller producers exit the pork industry in recent years, says Boal. This situation has led to demands for protectionist measures, with Mexican producers requesting that the government impose restraints on U.S. pork imports. "So are there opportunities for Canada (in Mexico)? Maybe, but they're not going to be enormous," says Boal.

South America

Various countries in South America, including Chile and Argentina, have proven themselves to be agricultural powerhouses in recent years, but when it comes to pork production, few compare to Brazil, says Boal. "Brazil is the 800 lb gorilla in the room," she says. "While we do not see the day that pork production will become more important than beef production or even poultry production (in Brazil), there is little doubt that Brazil is shaking off its poor cousin title."

Brazil's success in the world pork market has been driven by a high level of investment and integration, says Boal. Many major poultry producers in the country are also major pork producers, allowing them to get better value from existing customer relationships, marketing and infrastructure.

However, it is not a market without challenges. A deficiency in disease control continues to limit its access to key markets such as Japan, South Korea and, to a lesser extent, Western Europe. It is also highly focused on low value products, with 93 percent of its exports being frozen pork, says Boal.

Still, she expects Brazil and other key pork producing countries in South America to grow and expand. "One of the most interesting trends has been the geographic expansion of major Brazilian packers of beef, pork and poultry across the world," says Boal. "We expect that will continue."

Table 1: Productivity indicators for hog production in the Americas

	Litters /year	Pigs/sow /year	Feed conversion (kg lw)	Slaughter weight (kg lw)	Packer concentration (CR4)
Brazil	2.0	18.0	2.8	100	31%
Argentina	2.2	21.6	3.2	103	56%
Chile	2.2	24.1	2.9	108	95%
U.S.	2.3	23.5	2.9	109	68%
Canada (Ontario)	2.0	18.4	3.3	105	>55%

From: Rabobank estimates

The EU-25

Traditionally one of the world's largest producers and exporters of pork, Europe is showing signs of a return to protectionism, says Boal. Perhaps the most prominent example of this is the EU-25's recent decision to grant trade distorting "export refunds" to European pork exporters in order to offset rising feedgrain prices and provide extra leverage against the low U.S. dollar.

High feedgrain prices in Europe are complicated by ongoing resistance in some European countries to genetically modified feed, says Boal. Also, a high degree of industry fragmentation also exists, with a number of small, inefficient producers the EU-25 feels a responsibility to protect.

In the near future, Boal expects to see WTO trade action brought against the EU-25 over its export refund. "I can't really see (export refunds) helping domestic pork prices or really easing the prices producers (in Europe) pay for feedgrain. It will go straight to exporters."

PCVAD vaccine performance

Presentation by François Joisel, François Cardinal and Brent Jones
Summarized by Cara Dary, Alberta Pork

The devastating affects of Porcine Circovirus Associated Disease (PCVAD) are well known to hog producers worldwide having caused severe economic losses. The disease expresses itself in a variety of ways: from post-weaning multisystemic wasting syndrome (PMWS) to ear necrosis, proliferative enteritis, growth retardation and or gilt/sow mortality. In Alberta, most of these symptoms have been seen and in an attempt to control this, the majority of Alberta's producers now include PCVAD vaccine as part of their herd health regime.

Since the development of the PCVAD vaccine, researchers have been colleting data on its effectiveness and performance. Dr. François Joisel spoke at the 2008 Banff Pork Seminar on PCVAD vaccine performance in Europe. To examine vaccine performance in Canada, Dr. François Cardinal and Dr. Brent Jones, veterinary practitioners in Eastern Canada, discussed what they have experienced in the field.

European results – France and Germany

France

In France, 24 barns, representing 7750 sows, were studied using the Circovac® sow vaccine. Piglet performance was examined comparing litters from vaccinated and non-vaccinated sows.

Results with Vaccinated Sows: Post-weaning mortality rate decreased from 3.6% to 2.2 % (-1.4 points) and the wean to slaughter mortality rate decreased from 10.6% to 7.1% (-3.5 points). With the decreasing mortality rates, average daily gain also improved in all cases.

Table 1: « GTE » study in France – Results before versus after

	Before Vacc.	After Vacc.	Difference after vs before
Vet. Costs (€)	134 ± 37.1[a]	133 ± 28.8[a]	-1.1 (n=18)
Nursery mortality (%)	3.6 ± 2.1[a]	2.2 ± 1.2[b]	-1.4 (n=22)
Fattening barns mortality (%)	7.2 ± 2.7[a]	5.1 ± 1.6[b]	-2.2 (n=22)
Weaning-to-slaughter mortality (%)	10.6 ± 2.6[a]	7.1 ± 1.8[b]	-3.5 (n=24)
ADWG 8-30	456 ± 43.1[a]	470 ± 46.4[a]	+13.9 (n=21)
ADWG 30-115	754 ± 55.5[a]	784 ± 47.6[c*]	+29.9 (n=21)
ADWG 8-115	653 ± 43.2[a]	679 ± 40.5[b]	+26.4 (n=22)
FCR 8-115kg	2.75 ± 0.14[a]	2.64 ± 0.12[b]	-0.11 (n=22)
% in the range	84.3 ± 5.5[a]	85.5 ± 5.8[a]	+1.2 (n=14)

a,b: significant difference in the same line (p<0.05)
a,c: at the limit of the significant difference in the same line (p<0.10)*

Germany

Data was collected by conducting a questionnaire with all practicing veterinarians. The study spanned over 233 herds representing 66,700 sows and 2,000,000 pigs. Piglet, weaner and fattening pigs were monitored in litters from Circovac® vaccinated sows versus non-vaccinated sows. Key factors monitored included mortality rates, average daily weight gain, frequency of medication use and antibiotic use before and during vaccinations.

Results with Vaccinated Sows: Litters from vaccinated sows showed a significant improvement in health status as well as in economic variables such as average daily gain. A decrease in mortality rate and reduction in antibiotic use were also significant improvements in litters from vaccinated sows. The decrease in mortality rates was seen in all stages of pig performance (piglet, weaner and fattening). The decrease in piglet mortality is interesting as PCVAD typically affects weaning and finishing pigs; therefore a reduction in piglet mortality implies that perhaps subclinically PCVAD also affects newborn piglets.

Circovac® vaccinated herds found:

- Higher number of weaned piglets per sow
- Increased live born piglets per litter
- Reduction in time taken to return to oestrus
- Reduction in the number of abortions
- Reduction in the number of antibiotic treatments
- Higher homogeneity between pigs
- Reduced feed conversion rates
- Decreased mortality in nursery and farrowing stages

Eastern Canada results

To examine PCVAD vaccine performance in Canada, Dr. Cardinal and Dr. Jones, reported on their experiences with three

types of PCVAD vaccine, Intervet and Circoflex. Jones and Cardinal experimented with various brands of vaccine, various dosages and finally sow vaccination versus piglet vaccination. All data collected was from field experimentation, not controlled experimentation; therefore, confounding factors do exist in each trial. Preliminary conclusions are as follows.

Jones and Cardinal focused on three PCVAD vaccines:

1) Circovac® – sow vaccine
2) Intervet PCV2 at full, half and one doses
3) CircoFlex®

Preliminary conclusions based on field data

Fractional Dosing: Off-label use (1/2 dosing) started when PCVAD vaccine was first available to producers, demand was high and supply was limited, therefore producers tried spreading a small amount of vaccine to cover a large number of animals.

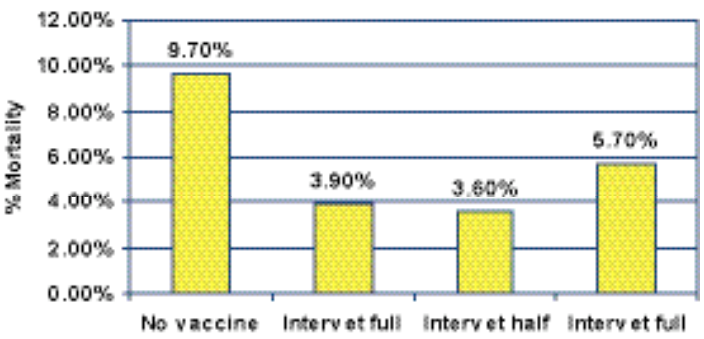
Table 2: Finishing mortality rates for one production system with various piglet PCV2 vaccination protocols

Vaccine	Number of groups	Pigs Placed	Mortality
No Vaccine	11	10,987	9.70%
Intervet PCV2 Once	6	7,585	5.70%
Intervet PCV2 Half dose	6	7,964	3.60%
Intervet PCV2 Full dose	38	42,832	3.90%
Ingelvac Circoflex	22	22,098	3.30%

Results have shown that fractional dosing can deliver equivalent mortality rates to full dosing but may have negative affects on economic factors such as average daily gain and feed conversion.

Little difference was found between full versus half doses of Intervet PCV2 vaccinated pigs. However, samples were collected from better than average management practices and disease control strategies were in place.

Figure 1: Fractional dosing with PCV2 vaccine

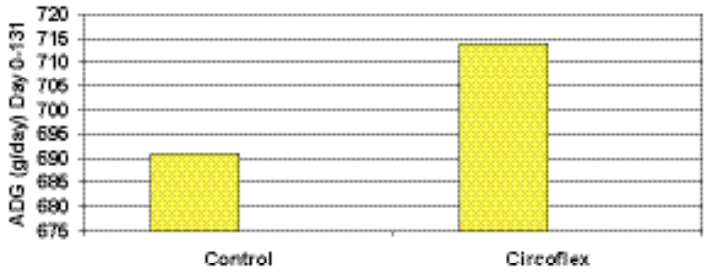


Considerations for vaccinating: It is important to acknowledge that multiple disease causing agents may be present in the environment which can affect a pig's immune response to vaccination. It is general practice to avoid vaccinating sick pigs.

It is difficult to know the best timing for vaccination, however, when vaccinating piglets, 16 days of age seems to be ideal.

Circovirus has been demonstrated to be present in subclinical form, therefore, if the herd has not tested positive for PCVAD, improvements may still be seen in mortality rates and average daily gains.

Figure 2: Sub-clinical herd controls -v- vaccinates



Adapted from data presented by Dr. Ernest Sanford at OASV fall meeting

Key Take Home Messages

PCV2 vaccines are the single most effective tool currently available in controlling PCVAD. Consistent results have demonstrated that the vaccination of piglets leads to the elimination of PCVAD. Even though the PCVAD vaccine has shown to be effective, it is important to eliminated circulating "Big Bugs" in the environment through good management practices to reduce the immunological stress load on pigs. This will allow for the PCVAD vaccine to take full affect on the pigs and allow them to develop strong immunity to the disease.

Biology of the prolific sow

Summarized by Bernie Peet

HYPER-PROLIFICACY AND ACCEPTABLE POST-NATAL DEVELOPMENT - A POSSIBLE CONTRADICTION

Increased selection pressure for numbers born has led to indirect negative effects of intra-uterine crowding, including less efficient growth performance and adverse effects on carcass quality, says George Foxcroft from the University of Alberta's Swine Research and Technology Centre. Improved prolificacy is associated with increased within-litter variation in piglet birth weight, as well as an overall decrease in average birth weight of the litter and an increased number of stillbirths. Ultimately, he believes, selection of sows with increased uterine capacity offers the best opportunity for increasing the number of pigs born per litter without compromising post-natal growth performance.

A considerable amount of the variation in growth performance after birth may be determined during fetal development in the uterus. The effects of this "prenatal programming" on postnatal performance are to limit muscle development and consequently growth from birth to market, adversely affect carcass quality and negatively impact the health of low birth weight pigs. (See *High litter size may compromise growth and carcass quality*, WHJ, Winter 2008, p39)

Unfortunately, although selection for improved prolificacy has resulted in an increase of litter size at birth in most breeding populations, this has been associated with increased within-litter variation in piglet birth weight, as well as an overall decrease in average birth weight of the litter. The high proportion of stillborn pigs in some hyper-prolific populations suggests that the growth potential of the live-born pigs that survive to weaning will be seriously affected by intra-uterine competition.

A better appreciation of the characteristics of prolific dam-lines is clearly needed. Selection of sows with increased uterine capacity offers the best opportunity for increasing the number of pigs born per litter, without compromising the post-natal growth performance of these pigs.

MANAGEMENT OF HIGH PROLIFICACY IN FRENCH HERDS: CAN WE ALLEVIATE SIDE EFFECTS ON PIGLET SURVIVAL?

Litter size in French herds has increased by 2 pigs per litter over the last 10 years, but what are the negative side effects of this high prolificacy? Is it possible to prevent or alleviate them by improving birthweight, viability or litter uniformity? And, if not, what are the most efficient strategies at farm level? Sylviane Boulot, of the French Institut du Porc, discusses research findings and commercial experience that point the way towards greater piglet survival.

Introduction

The development of hyper-prolific sows has been associated with a dramatic increase in perinatal mortality. Total number of piglets born per litter increased from 11.9 in 1996 to 13.8 in 2006. Simultaneously, total mortality increased from less than 19% up to 21%, with about 25% of herds losing more than 25% of piglets born before weaning. Despite this, in 2006, the 10% most efficient French farms weaned 30 piglets/productive sow/year, with 14.3 total born per litter and only 17.3% total piglet losses.

Consequences for piglets and litters

Mean birth weight and litter uniformity

As litter size increases, birthweight is reduced and its variability increases (Table 1). Smaller piglets clearly have a lower survival rate than their heavier littermates. Most piglets weigh more than 1.4 kg at birth in small litters, whereas the proportion of pigs >1.4 kg falls below 50% in litters of 16 piglets and more (Table 1). The increased occurrence of litters with a high proportion of less viable piglets explains, at least in part, higher pre-weaning mortality.

Table 1: Effect of litter size on piglet birthweight variation (1380 litters - 2000 to 2004).

Litter size (class)	9	10-11	12-13	14-15	16
Mean parity	2.6	2.3	2.5	2.6	3.5
Litter					
n	161	134	245	334	506
No. total born	7.2	10.6	12.6	14.5	17.6
No. born alive	7.0	10.2	11.9	13.8	16.2
No. stillborn	0.3	0.4	0.6	0.7	1.5
Mean BW, kg	1.89a	1.67b	1.57c	1.47d	1.38e
CVBW, %	14.9d	17.4c	20.2b	21.3b	23.7a
Distribution in BW classes, %					
< 1.0 kg	3e	5d	8c	10b	15a
1-1.4 kg	8e	16d	21c	29b	34a
1.4-1.8 kg	27c	39b	43a	43a	38b
> 1.8 kg	63a	40b	28c	19d	13e

a,b,c,d,e Within each row, means with no common superscript differ (P < 0.05).

Immunity and colostrum intake

Because energy stores and immune protection of the newborn piglet are poor, colostrum consumption is essential for survival. Piglets that die early are lighter at birth and have consumed less colostrum than piglets still alive at weaning. Subsequently, these small piglets have lower ability to control their body temperature. They are generally less vigorous and less able to compete with larger littermates for teat access and experience a delay between birth and first suckling. Besides piglet body weight, litter size also influences colostrum intake. Unlike milk production, colostrum yield hardly increases with litter size. Therefore, colostrum availability for each piglet is reduced in large litters.

Specific strategies at farm level

Pregnancy and farrowing induction

Because fetal growth rate is high during the last weeks of gestation, an extended gestation length will improve birthweight and piglet viability. In practice, gestation length varies within narrow limits and is difficult to manage, but about 5% of French herds occasionally use altrenogest to prevent premature farrowing before 112 days. Induction of farrowing is common (77% of farms), especially in prolific herds. Good induction practice based on individual monitoring of expected farrowing time will have positive effects through more efficient supervision.

Farrowing supervision

Total parturition time for large litters may exceed 5 hours, with subsequent risks of more stillborn pigs, and weak or anoxic piglets. Therefore close supervision of farrowing is essential in hyper-prolific herds. Effective interventions include manual removal of piglets from older sows, assistance on the morning after a night delivery, or slow farrowings. Immediate drying and warming of newborn piglets is essential. The use of treatments to speed up the farrowing process, such as injections of calcium, vetrabutin, oxytocin or carbetocin is common in French herds.

Perinatal management of piglets and sows

Additional assistance for the weakest piglets over the first 48 hours of life dramatically increases their survival. This may include delivery of energy rich pastes or preserved colostrum, split-suckling or supervised nursing, re-hydration, and prevention of crushing when the sow is eating. Early fostering is necessary, either by weight or by numbers. However, piglets should not be moved before they have suckled their dam's colostrum (6 hours). Prevention of infections is also a priority because of the poor immune status of small piglets. All these strategies require more qualified staff and are time consuming: +1.5 hr/sow during the farrowing week in French batch management systems.

Speakers in the session (L to R) – Bernie Peet, Sylviane Boulot and Ron Ball

Adaptations of feeding strategy

Hyperprolific sows have increased nutrient requirements during lactation. Even with higher feeding scales and better diets, sows with large litters may not eat sufficient nutrients. In most cases, nutrient deficiency is compensated by body reserve mobilization. During the following gestation, particular attention must then be paid to repletion of body condition through an adjustment of gestation feeding level.

continued on page 74

The aim of gestation feeding is to reduce variation among sows at farrowing. Indeed, increasing variation in backfat may lead to a higher percentage of stillborn piglets associated with complicated farrowings of too fat or too weak sows.

With 14-15 total born piglets, available nutrients for fetal growth may be insufficient during the last weeks of gestation if the feed allowance is not increased. An increase in feed level of 900g/d has been shown to result in easier farrowings and more vigorous piglets, although it did not increase piglet birthweight.

Conclusions

Increased prolificacy has led to lower piglet survival. Although very few management procedures may directly improve piglet quality, specific strategies may be implemented at farm level that will partly compensate for the side effects of large litters, before and after weaning. Since 2002, French breeding programs select for born alive instead of total born, and also for functional teat numbers. The addition of new components of maternal ability such as sow behaviour, farrowing quality, colostrum production, and piglet weight, vitality or growth rate may also improve survival.

30 PIGS/SOW/YEAR – IMPACTS ON THE SOW

Genetic improvements in litter size have provided the potential to wean 30 pigs per sow, but there are a number of disturbing aspects of this improved sow productivity, especially increased sow deaths and reduced longevity, warns Bernie Peet of Pork Chain Consulting Ltd. Changes to feeding and nutrition, the sows' environment and management practices are required in order to overcome the problem, he says.

Death loss and sow longevity

In many countries around the world, sow longevity is decreasing and sow mortality is increasing (Table 1). While the reasons are complex, there seems no doubt that the greater nutritional and physical strain on the sow as a result of the increased productivity, especially in her early life, is a major factor. Also, a decrease in gilt and sow backfat levels means that they have less tolerance to deficiencies in management, environment and nutrition. Lean animals are also more prone to physical injury, notably shoulder and leg abrasions, which may lead to culling. Another factor is the intensification of production systems leading to harsher conditions, which are more likely to lead to injury, combined with a lack of suitable hospital facilities to deal with sick, injured or disadvantaged gilts and sows.

Table 1. Sow death and culling rates – 2000 and 2005

	Canada		USA		GB	
	2000	2005	2000	2005	2000	2005
Av. death rate (%)	4.7	8.1	6.9	8.9	3.9	5.8
Top 10% herds	1.5	5.5	2.7	4.8	3.4	3.7
Bottom 10% herds	-----	13.2	-----	13.2	-----	-----
Av. culling rate (%)	41.1	44.5	44.6	51.2	38.1	38.8
Av. replacement (%)	49.6	60.3	56.9	63.1	45.9	54.0

Source: PigChamp Benchmarking/MLC

Sow longevity may be improved by changes to management, nutrition and feeding, and the pig's environment. Some of the practices that should be employed include:

- Breeding gilts at a target weight of 135 -150kg, to farrow at a weight of 180 -190kg.
- Avoiding overfeeding gilts in gestation, which will improve first lactation feed intake.
- Where possible, using a higher lysine lactation diet for gilts (for example in a start-up situation, where all the females are gilts).
- Maximizing lactation feed intake of all females
- Feeding gilts and, if necessary, second parity sows, 0.5 kg of a high energy/protein top dressing for the last 7 days of lactation and from weaning to breeding.
- Paying special attention to flooring surfaces, especially for gilts and young sows, replacing or repairing materials when necessary.

The focus of management should be to nurture the gilt and second parity sow so that she reaches the highly productive 3-6 parity stage, thereby increasing average sow longevity.

Feeding strategy critical

Feeding and nutrition of the gilt and sow not only impact longevity, but also the quantity and quality of piglets born and weaned.

Low feed levels in early gestation may be counterproductive in high-performing sows, reducing the number of surviving embryos. Danish work showed that a high feed intake in the first 28 days of gestation led to improved numbers born and less sows culled.

However, an additional recommendation for gilts is to feed low levels for at least the first 3 days after breeding.

Increasing feed intake in late gestation (day 85+) is especially important in younger females that are still growing, to avoid them reaching farrowing in a catabolic state. Increased feed levels are unlikely to increase birthweight but may improve piglet viability after birth.

Very high feed levels (3.5kg+) between weaning and breeding has been shown to increase ovulation rate and embryo survival. Very few producers pay feeding at this stage the attention it deserves.

Highly prolific sows require management strategies to be focused on piglet survival and sow longevity

The most critical stage for the gilt nutritionally is her first lactation, because her appetite is low relative to the demands of milk production. The use of a higher lysine lactation diet (1.2 – 1.3% total lysine) or feeding a top dressing can help to improve subsequent performance. Another approach, used extensively in Denmark, is to extend the gilt's lactation length to 30-35 days by using her as a foster mother. By removing the gilt's own litter at 20 days and fostering on a litter of 5 - 7 day old piglets, the nutritional load on the gilt is reduced considerably, diverting nutrients to restoring her own body tissues.

NUTRIENT REQUIREMENTS OF PROLIFIC SOWS

The nutrient requirements of modern sows, and the availability of dietary nutrients for sows, are very poorly known in comparison to our knowledge of growing pigs. The productivity of sows has increased dramatically in the last 20 years, however, the research on which current dietary recommendations are based dates from the late 1970's to the early 1990's, points out Ron Ball from the University of Alberta. Recent research shows that the current recommendations for both energy and amino acid intake in sows are incorrect by a significant margin, he says.

Introduction

Incorrect nutrition may have a negative effect on many aspects of sow performance and can also result in sub-optimal body

continued on page 76

composition, including, either too little or too much backfat, reduced feed intake during lactation, and too great a loss of body protein during lactation.

Sixty to 80 percent of the energy and amino acids consumed by sows during gestation are used for maintenance of normal metabolism and activities of the body. Therefore, research on energy and amino acid requirements of sows must begin with accurate estimates of maintenance requirements for energy and amino acids. If this basal value for maintenance is wrong, then all the subsequent values will also be wrong.

The impact of lactation on the metabolism of the sow is large, but nutrient requirements of sows during lactation are extremely difficult to study because they change daily. Therefore, very rapid and sensitive methods are required to study energy and amino acid requirements.

Increases in sow productivity

Modern sows have more piglets born per litter, rear more and heavier piglets to weaning, have more lactations per year, and re-breed faster and more consistently. Nutrient recommendations based upon research using less productive sows than those currently on farms should be suspect. The current NRC (1998) produced a mathematical model that attempted to take many of these productivity factors into account and thus predict the effects on nutrient requirements. However, as discussed later, intense genetic selection has changed the basal metabolism of pigs. Thus the fundamental data underlying the current models for sow feeding must be updated.

Energy and protein metabolism in sows

In a recent review of heat production in swine, the authors showed that daily heat production (HP) had increased 18.1% (approximately 1% per year) during the period 1984 to 2002 due to changes in average body composition of the animals (more muscle, less fat) and increases in the rate of lean tissue growth.

The rate of lean tissue turnover (the rate of protein synthesis and breakdown), which contributes to both energy and amino acid requirement, also increases as lean growth rate increases in pigs. It has been argued that the metabolizable energy for maintenance (ME_m) must be increased as the rate of lean tissue turnover is increased. There are no published estimates of protein turnover rate in sows but it is a critical value because it affects both energy and protein requirement of the pig.

Increased HP by swine also has significant implications for building design and management. Heat production parameters used to calculate ventilation requirements are based on experiments carried out in 1959; therefore more current estimates of maintenance energy are required.

Maintenance energy requirement

Experiments at the U of A have re-evaluated the daily maintenance energy requirement (ME_m) of sows that represent lines of pigs with high lean growth rate, and are highly prolific. We concluded that the current NRC value for ME_m is too low for this population of sows by about 14%. Changes in energy requirements are probably due to a decline in backfat and an increase in lean body mass, resulting in an increase in protein turnover rate in sows.

Protein and amino acid requirements of sows

Similar to the problem with energy, there are few estimates of amino acid requirements for sows derived from modern strains of pigs with high lean gain and highly prolific dam lines. We have recently measured maintenance lysine requirement of sows. The dietary lysine requirement was calculated to be 49 $mg/kg^{0.75}$, which exceeds the current NRC recommendation by 30%.

There are very few estimates in sows for the requirements for the other amino acids. We believe that amino acid requirements of modern lines of high performance sows should be systematically re-determined for maintenance, and during gestation and lactation.

Phase feeding for sows

Currently, most sow diets and feeding programs assume that amino acid and energy requirements are constant throughout gestation and lactation, but our research clearly demonstrates that they are not. The sow and litter body weight gain during gestation increases the amino acid maintenance requirement as gestation progresses. Both energy and amino acid requirements need to be determined for different periods of gestation and lactation.

Conclusion

The productivity and performance of sows has changed greatly in the last 20 years as a result of genetic selection and improved management. However, our understanding of the nutrient requirements of sows has not kept pace with the increases in animal performance. Our recent research shows that the NRC (1998) recommendations are significant underestimates of the energy and amino acid requirements of the prolific sow. New and more accurate nutrient requirements for prolific sows will support continued increases in productivity and reduce the negative side effects of high prolificacy. WHJ

Containing the cost of feed

Summarized by Bernie Peet

FARMER DRIVEN SOLUTION – DEVELOPING WHEAT FOR WESTERN CANADA

David Rourke

Current wheat varieties do not provide the high starch grain required by the livestock and ethanol industries, but regulations imposed by the Canadian Wheat Board do not allow the development of new cultivars to meet this need. However, the Western Grain Development Coop has been working to develop such new varieties and David Rourke explains how producers can gain access to these through his organization.

Reduction in grain production

Over the last two decades, decreasing farm receipts have led to a reduction in the number of farms across the Prairies. As grain farms become fewer, the remaining farmers are looking to grow crops that are more profitable. Consequently, Canadian wheat acres (excluding durum) have decreased steadily since 1987, with the wheat acres for 2007 estimated to be below 15 million.

The breakeven yield to cover the total costs of wheat production (including labour) is 45.7 bushels per acre. Unfortunately, the approximate average yields in Manitoba and Saskatchewan are 34 and 31.8 bushels/acre respectively. These figures are causing farmers to research higher yielding varieties that will increase farm gate receipts and increase the sustainability of their operations.

High yielding, fusarium resistant wheat development

Fusarium resistant, high starch, high yielding feed wheat is required for both the ethanol production and livestock industries and this need has significantly increased in recent years. By the end of 2007 a total of six ethanol facilities will be using 41.3 million bushels of wheat. The combination of a countrywide demand for a reliable feedstock, and lower availability of US corn due to supplies being consumed within the US, emphasizes the need for dependable feed wheat cultivars.

Current winter wheat, hard red spring, and prairie spring varieties will not provide the industry with a reliable, superior feedstock because all of the current varieties are tailored toward export markets for human consumption. The development of a domestic use, starchy variety should not be a difficult task, except that there are currently no provisions in Western Canada that allow for registration of this type of wheat. Unfortunately, the efforts by both public and private plant breeders for over thirty years have been without success due to the limitations on registration imposed by the Canadian Wheat Board.

Given the current registration limitations and the unwillingness to change these regulations, the development of superior cultivars may lie in the hands of private initiatives. The Western Feed Grain Development Co-op (WFGD Co-op Ltd.) was established in December 2005 and has been actively working to develop cultivars that possess characteristics that will benefit the ethanol and livestock industries. The Cooperative gives every farmer in Western Canada an opportunity to become a member and the group will collectively own the germplasm developed. Throughout development, breeders will not be concerned about Kernel Visual Distinguishability or export quality because the grain will not be destined for export facilities. Members will be informed of this restriction and will understand the negative consequences of the contamination of export wheat. The Co-op will work within the established variety registration framework if possible, however since this has the potential to be a closed Co-op, with specific end use and distribution only to members, the likelihood of proceeding forward in one manner or another is extremely high.

The initial target for development is to provide lines that have high starch, fusarium resistance and a 30-40% higher yield than that of hard red spring wheat. This program will have real and meaningful results, but there is a substantial requirement for funding and upfront member commitment to ensure success.

Corporate contributions, membership fees, and government research grants will fund development of these cultivars and there will be no royalties charged. The breeding program commenced in the summer of 2005 and the group is anticipating a limited seed release in 2008-2009. WFDG Co-op Ltd is working to expedite the breeding program by using a variety of research facilities and techniques including greenhouses, growth rooms, growth cabinets, winter nurseries, etc.

Three crosses were made in 2005, seven in 2006, and twelve further crosses made in 2007.

USING PULSES, CANOLA MEAL AND OTHER STRATEGIES TO ENHANCE THE COST-COMPETITIVENESS OF SWINE DIETS AND RESULTING PRODUCTION EFFICIENCY

Pulses and oilseed meals have the potential to supply significant proportions of energy as well as protein and their availability is increasing as a result of biofuel production. Also, increasing scrutiny over the use of mammalian proteins in pig diets and segregation within feed mills means pulses and oilseed meals may sometimes be the only protein sources available. Robert van Barneveld, a nutrition consultant from Queensland, Australia, describes opportunities to exploit pulses and canola meal in pig diets and ways to ensure the nutrients they supply are used with optimum efficiency.

Nutritional attributes of pulses and canola meal

Field peas, lupins and faba beans are the dominant pulses utilized as nutrient sources for pigs, but a range of other pulses and associated by-products from splitting or seed cleaning are sometimes available.

The comparatively high crude protein and available amino acid content of pulses compared with cereals makes them a valuable addition to pig diets. In contrast, the lower starch content of peas, and particularly lupins, compared with cereal grains, reduces their net energy contributions to pig diets. A higher proportion of the energy derived from pulses fed to pigs is derived from fermentation in the hind gut compared to cereals and this needs to be considered if they are being incorporated into diets at higher than traditional levels.

The response of pigs of all ages to canola meal inclusion in diets is generally favourable, with some qualifications. In particular, the nutritional quality of canola meal will be influenced by the residual oil content, which will impact on the digestible energy content of the meal. Cold-pressed canola meal has a higher oil content compared to solvent-extracted canola meal. Other important factors include the levels of glucosinolates, which may affect feed intake, and the level of heat imparted during oil extraction, which can damage the residual proteins and thus reduce bio-availability of amino acids.

Heat damage during canola meal processing and drying can result in an overestimation of nutritional quality. Despite similar total lysine concentrations in the canola meals, true ileal reactive lysine digestibility is significantly higher in meals subjected to lower processing temperatures.

Maximum inclusion levels of pulses and canola meal

Pulses

The inclusion rate of pulses in the diet is influenced by a range of factors:

- The amount of oligosaccharides, which can affect digestible energy content
- The source of non-starch polysaccharides (NSPs) in the diet, which can influence the response of pigs to pulses

continued on page 80

- The level of Anti-nutritional factors (ANFs) such as protease inhibitors, trypsin inhibitors, lectins and tannins
- The level of Trypsin inhibitor activity (TIA). Levels exceeding 2.5 can reduce the apparent ileal digestibility of protein

Canola meal

The primary factor influencing the inclusion of canola meal in pig diets is the glucosinolate content. Based on low glucosinolate in solvent extracted canola meal, the following inclusion rates can be utilized for pig diets:

- Weaner pigs can tolerate up to 250 g/kg canola meal in diets from weaning at 20 days of age to 62 days of age without adversely affecting growth performance
- Canola meal can be included in grower/finisher diets up to 300 g/kg without any adverse effect on growth performance or thyroid function
- Up to 200 g/kg canola meal can be included in diets for lactating sows without reducing their lactation or reproductive performance

Conclusions

Pulses and oilseed meals will be in increased demand for use in pig diets given the cost pressures against cereals and increasing scrutiny over the inclusion of mammalian proteins in livestock diets. There is sufficient nutritional knowledge to ensure pulses and canola meal are included in pig diets and utilized with optimum efficiency, however, there is a need to ensure variation in nutritional quality is accounted for prior to diet formulation and to ensure that higher inclusion levels of these products are not compromised as a result of lack of attention to the potential negative effects of anti-nutritional factors or non-starch polysaccharides.

CONTAINING FEED COST USING BIOFUEL CO-PRODUCTS

The rapid increase in availability of co-products of the ethanol and biodiesel industry, namely distiller's dried grain and solubles (DDGS) and canola press cake, does not necessarily represent a low cost feed panacea for the livestock industry, say Eduardo Beltranena and Ruurd Zijlstra. Both biofuel co-products are high in dietary fibre and protein, and fibre utilization is poor in pigs. Excess dietary protein contributed by these co-products could also mean greater nitrogen excretion and potentially greater harm to the environment. Their paper summarizes some recent research findings and reviews feeding strategies to optimize the inclusion and utilization of biofuel co-products in pig diets.

Energy values of DDGS - the greatest challenge

The depletion of starch in grain resulting from its microbial conversion to ethanol and the expeller removal of oil from canola means that both DDGS and canola press cake are high in fibre and protein.

The primary feed issue with DDGS is what is its true dietary energy value, the main influence being the grain used to produce the ethanol.

Fermenting wheat concentrates the fat content from approximately 2% to 5 - 6% and fermenting corn from approximately 4% to 9 -11%. Therefore, DDGS from a mix of these two grain stocks can have a fat content ranging from 4 to 12%. Because lipids provide the largest dietary energy per unit, such wide range in fat content in a DDGS grain mix can complicate diet formulation and accurate prediction of animal growth.

Wheat has somewhat higher fibre content than corn (3% vs. 2%) and the fibre in wheat is also less digestible than the fibre in corn. If whole wheat is ground and fermented without removing the bran and blended with corn, the range of fibre digestibility in a DDGS mix of both grain stocks again becomes more variable.

Fermenting corn concentrates the protein from approximately 9% to 25 - 26%. Fermenting wheat concentrates the protein from approximately 13% to 32 - 38%. If diet formulation is based on crude protein, this may not give a proper estimate of dietary energy. It has been shown that each 1% extra protein in the diet decreased NE by 1% due to the energetic cost of excess nitrogen excretion.

The nutritionist's main problem is therefore the range in dietary energy content of DDGS. The only way to estimate the variation in nutrient provision in DDGS from constantly changing grain stocks is to conduct extensive lab testing. Alternatively, a single supplier that is committed to using a single grain stock may be used. Use of the net energy system helps to overcome the wide variation in ingredient nutrient provision. The nutritionist can then gain the advantage of the higher fat content while reducing the negative impact on performance of both high fibre and excess protein in DDGS.

Fibre digestibility of DDGS - contribution to energy

The extent of fibre digestibility in DDGS will depend on the grain stock fermented and the way it is processed, for example removal of the hull from barley or the bran from wheat prior to fermentation will reduce insoluble fibre content and consequently increase the energy value of DDGS. The proportion of solubles (stillage) added back to DDG during the drying process most likely increases soluble fibre content and augments the variability in fibre digestibility.

Addition of xylanase, cellulase and even protease feed enzymes to diets containing DDGS may enhance its fibre and protein digestibility.

Amino acid availability of DDGS - processing effects

If hog diets are formulated on the basis of total protein or amino acids, there will be a consequential increase in nitrogen excretion. Again, the net energy system is the only way nutritionists can discount the ingredient value due to excess protein and increased nitrogen excretion.

The processing method impacts protein content and quality, especially the drying process. The intensity of heat, the duration of heating, the speed of heating, and the equipment used for drying can cause amino acid damage, which generally becomes evident as the product becomes increasingly darker. However, improper fermentation and excess solubles added-back can also confer a dark colour to DDGS, which will deepen with improper drying (scorching).

The best criterion we have to test for drying damage to protein is bio-available lysine. Lysine is the first limiting amino acid for swine and the one most likely to become heat-damaged. However, chemical testing for bio-available lysine is expensive and not routinely conducted by local feed labs. Other measurements, such as colour, are being developed for faster and cheaper assessment.

Phosphorus in DDGS - enhancing its availability

Phosphorus content concentrates two to three times in DDGS compared to the parent grain stock. Although damaging to protein quality, overheating at drying also increases phosphorus availability. Thus, the larger the inclusion level of DDGS in the diet, the lower the consequential need to supply phosphorus from inorganic sources, resulting in feed cost savings.

The use of a phytase enzyme can further increase phosphorus availability from wheat DDGS.

Feeding DDGS - high levels of inclusion

In addition to the concerns discussed above, there are two others: one is palatability and voluntary feed intake; the other is the effect on carcass and pork quality.

Local results suggest that good quality corn DDGS can be included in hog diets up to 25% of the diet without negative effects on feed intake. Practical dietary inclusion levels of wheat DDGS in Prairie hog diets are likely to be lower compared to the high inclusion levels of corn DDGS in American corn-based diets. With our high protein Prairie wheat, it doesn't take much for excess protein to constrain wheat DDGS inclusion levels.

DDGS - effects on carcass and pork quality

Feeding DDGS may result in a small decrease in carcass dressing percentage due to the high fibre level, which increases the weight of gut contents.

High corn DDGS inclusions are a greater concern for pork quality than high wheat DDGS inclusions because corn DDGS contains nearly twice the fat content. Increasing levels of corn DDGS up to 25% did not increase backfat thickness. However, the type of fat in corn DDGS is unsaturated, like in canola press cake, and feeding unsaturated fats to hogs is known to cause various meat quality problems.

Feeding decreasing levels of DDGS as hogs approach market weight is a strategy that should reduce feed cost and mitigate the negative effects on pork quality.

Canola press cake - feeding considerations

The main issue with this co-product will be the variability in residual oil content after pressing. Therefore, fat analysis should be requested in addition to protein and moisture content at testing.

The two main issues restricting canola press cake inclusion rates in hog diets are palatability and the effect on carcass and pork quality discussed earlier.

Glycerol is also a co-product of biodiesel production and is primarily used in the manufacturing of soaps, but can also be fed to livestock. Trials have suggested that glycerol is a highly digestible source of energy for nursery pigs and hogs because the digestible energy value was not different from the gross energy value of crude glycerol.

Conclusions

The issues surrounding the nutrient variability of DDGS are a barrier to reliably predicting animal performance. Knowing the main grain stock, some processing details, adopting rapid scanning (NIRS) technology and formulating hog diets using the net energy system, should go a long way to containing feed cost for hog producers. But, as the availability increases and co-product cost decreases, pork quality - if not voluntary feed intake first - may be what will ultimately determine the highest levels of dietary inclusion of biofuel co-products. WHJ

Trucking with tenderness

Summarized by Bernie Peet

BETTER HANDLING, BETTER PORK

The way that pigs are handled while loading, during transport and when unloaded at the processing plant can have a major effect on pork quality, says Jeff Hill, Provincial Livestock Welfare Specialist with Alberta Agriculture and Food. Not only that but there are significant welfare implications for the pig. He explains some of the factors that need to be considered in order to minimize stress, reduce death losses and ensure good pork quality.

Handling impacts quality, cost and welfare

Many factors influence the behavioral and physiological responses of the pig during handling and transport including genetics, slaughter weight, environmental conditions (temperature and humidity), health status, marketing strategy, time off feed, pre-transport experiences, facility design, and handling method. Even the "best" conditions will cause significant changes in the pigs' physiology and behaviour, negatively impacting pig performance and pork quality.

Data from the USA suggest that the cost of pork quality problems, such as pale, soft and exudative (PSE) meat, abnormal colour and bruising combined with the direct loss of pigs that die during transport is, on average, around $2.44 US per finisher. These direct financial impacts represent only a small fraction of the true cost of marketing and pig transportation stress.

However, these costs and losses in efficiencies are all secondary to the ethical obligations and moral responsibilities we have to the animals under our care and to the consumer that trusts the pork industry to produce, transport and process our animals in a humane and compassionate manner.

The pig's senses and response to stress

The way a pig behaves is dictated by the cues received from its environment, utilizing its basic sensory capabilities of sight, hearing, touch and smell. In addition, pigs are social creatures that desire to remain in groups, preferring to maintain visual, if not physical, contact with their pen mates. If isolated, pigs can become highly agitated, and the resulting excitement of the individual animal will negatively impact the behaviour of an entire group.

Research has demonstrated that the process of handling and transportation can be visualized as "additive stressors". Over a given period of time, the pig is exposed to one stressor after another. Each time a new stressor is added, the stress response of the animal continues to become more intense. At some point, if the animal does not have time to recover, then the ultimate end-point will be death.

Facilities and people are key to good handling

Good animal handlers who understand animal behaviour, the production system and their impact on pork quality can minimize the impact of poor facility design. However, the best facilities can be rendered inadequate by poor animal handling. The animal handler's primary objective is to minimize the animal's level of fear and therefore their negative stress by maximizing positive interactions while encouraging the animal to move to the target location. This is accomplished by understanding the animal's "point of balance" and how to manipulate the edge of the flight zone. The majority of pigs can be moved simply by understanding and utilizing the point of balance without ever employing a moving aid.

Most handling, loading and transportation systems are poorly designed, so that the industry is forced to rely heavily on negative motivators or repulsive forces, most notably fear and pain, to move pigs. Instead, all production, transportation and processing facilities must be designed based on the behavioural and physiological attributes of the pig. The goal of any handling and loading system should be to provide a continuous unidirectional flow of pigs from the pen to the trailer and trailer into the plant, with minimal amount of stress on the animal.

CLT AND TQA WORKING TOGETHER

Training and certification of people involved in handling pigs during loading, transport and unloading can play an important role in improving animal welfare, biosecurity and pork quality, says Bill Mullen of the Western Hog Exchange. He explains how the Canadian and US programs operate and the topics they cover.

The Certified Livestock Transporter (CLT) program in Canada and the Trucker Quality Assurance (TQA) in the United States share a common goal: to educate those involved with moving pigs about the importance of proper handling in the loading, transportation and unloading of the pig with particular attention to animal care.

TQA addresses loading, transportation and unloading of pigs and how this affects animal welfare, biosecurity and pork quality. With the cooperation of the National Pork Board, provincial pork organizations and others in Canada have been delivering TQA since 2002.

The CLT program received permission from the US National Pork Board to use their Trucker Quality Assurance training course as the basis for the CLT hog module. It was created under the guidance of Canadian transporters, researchers, federal and provincial government personnel, hog producers, veterinarians and industry representatives and was launched in May, 2007.

Components of CLT and TQA

Both CLT and the TQA programs deal with the following:

Drivers: The driver's attitude must be positive when handling and transporting animals. Tone of voice, body language, and handling practices affect the condition of livestock during loading and unloading. It is crucial for truckers and handlers to understand pig behaviour and physiology in order to transport and handle them effectively.

Handling: Understanding the pig's natural instincts aids the loader when it comes to proper handling techniques. When a handler takes advantage of the animal's natural movement the animal is less stressed which improves both handler safety and animal care. The animal loads more quickly and arrives at the processor with less bruising and skin injuries, resulting in fewer losses.

Fitness of the animal: Loaders and drivers must be able to recognize signs of stress in order to determine whether or not to

continued on page 84

load the animal. The "Humane Handling of Swine" guidelines provide assistance in determining what is acceptable for transport. Transporters have the responsibility not to ship any animal that shows symptoms of illness, has a severe injury or is extremely fatigued.

Facilities and equipment: Properly designed and maintained loading facilities are as important as any other part of the production system. Improperly designed chutes and ramps cause problems during loading and unloading. Design of the system should promote a pig's natural following behaviour.

Loaders should use driving aids that help move animals in a safe, humane and timely manner. The use of electric prods is extremely stressful to the animal and must be avoided.

Special care must be taken when trucking in extreme weather conditions (photo courtesy Western Hog Exchange)

Weather and trucking: Drivers must be prepared for a wide range of weather conditions and need to know how these will affect the pigs in their care.

Winter weather can mean high wind chills and freezing temperatures. Pigs have little natural protection from the cold and suffer frostbite quickly so ventilation must be adjusted accordingly, although insufficient airflow in the box may result in suffocation. The sides and floors of metal vehicle boxes should have wooden liners and plenty of bedding should be used.

In hot weather, truckers or handlers must make every effort to keep their pigs cool and calm, follow recommended loading densities, maximize airflow to all compartments and wet down bedding materials with cool water. When possible, deliveries should be scheduled early in the morning or in the evening, avoiding the heat of the day.

Emergency Response Plans

CLT provides truckers with a toll free line (1-800-506-2273) to report on concerns and seek advice if needed. As part of this CLT Information Exchange service, truckers will be notified of any regulatory changes, updates, security issues and other professional development workshops.

TQA also gives a suggested plan of action in the case of a truck/trailer rollover. CLT covers emergency procedures as well as suggestions on incident response in its core manual.

A TRUCKER'S EXPERIENCE – WHAT WORKS

Steve's Livestock Transport, of Blumenort, Manitoba, has been at the forefront of new developments in safe, humane and biosecure transportation of pigs. It is important to show consumers and animal welfare groups that good animal handling are both a priority and a reality within the hog industry, say the company's Rick Peters and Steve Brandt. They describe some of the innovations their company has been involved in over the last 20 years.

Introduction

Steve's has worked closely with the CFIA in developing acceptable trailer stocking densities, which are now used nationwide. We have also developed a formula that uses the length of trip, temperature and humidity to calculate guidelines for stocking density according to type of pig.

Steve's Livestock, along with other industry leaders, has been instrumental in developing an emergency response unit. Qualified members of our team are on call and ready to respond in the event of a traffic emergency dealing with pigs or cattle within Manitoba. This unit includes all the tools and equipment needed to promptly respond in the event of an emergency. The team is TQA certified and qualified to deal with stressed and injured animals.

Transportation

The company has some of the most innovative facilities, equipment and protocols in the industry, which lead to greater cost-effectiveness, improved quality washing and better biosecurity. For example, a design modification to quad deck trailers allows loading of all four levels from one 4-foot loading dock. This resulted in the ability to load more animals per trailer, reducing cost for the producer.

Animal safety has been improved by extending ramps to reduce the slope and reducing the height of the ramp cleat spacing. We've worked together with the manufacturing sector to seal any open tubes or crevices to eliminate packing of debris that cannot be properly cleaned, which has reduced washing time while remaining biosecure.

Strict protocols for washing and disinfection are followed. No trailers containing livestock are allowed on the SLT facilities. Trailers must also be scraped out off site. Straw used for bedding comes from land where no hog manure is spread.

The trailer washing inspection process includes a checklist that must be completed by the shift supervisor. Failed inspections result in the trailer being washed a second time and re-inspected. Supplementary spot checks are completed on a minimum of 20% of all complete washes.

Additional monitoring includes taking weekly culture samples from different areas inside the trailer, which are submitted for bacteriology. This process allows us to maintain the effectiveness of our wash procedures.

Training

All wash bay employees go through training in the biosecurity procedures that must be followed. Each employee is responsible for a specific task to confirm quality washing is completed and staff are accountable for any breaches in biosecurity. Employees working the wash bay cannot reside on a hog farm. Driver training gives emphasis on the reasons for biosecurity to enable each individual to understand how far-reaching repercussions of a simple mistake or misinterpretation can be.

Humane transportation of livestock

All drivers are trained in proper animal handling as outlined in the TQA ™ handbook. Training is given to explain that aggressive handling is dangerous and how loading and unloading alone can cause excessive stress for the animals. Drivers are also taught the signs of fatigue in animals. Education is given on the effect of stress on meat quality. Stockprods are prohibited on breeding stock loads and drivers are only allowed to use prods on other loads after express permission has been given at the site.

Stocking density guidelines are provided for our drivers to ensure the trailer is loaded with the comfort of the animal in mind. We have also developed a Bedding Requirements Chart outlining the proper amount of bedding required for North America's extreme weather conditions.

Truckers are well informed on the correlation between all aspects of the food chain and their role in ensuring a superior product for the consumer and profitability for the producer.

CFIA TRUCKING REGULATIONS

Regulations for the transport of animals date back to the 1970's and are in the process of being changed to be more relevant to current conditions. Nicole Cormier and Gordon Doonan, of the Canadian Food Inspection Agency explain what is being proposed and how the industry has responded to the suggested changes.

Introduction

The Canadian Food Inspection Agency (CFIA) plays an important role in providing protection for animals used in food production. Its responsibility for farm animal welfare is science-based, seeks to reflect contemporary societal attitudes, and relates to two distinct areas: transportation and slaughter.

Why regulations?

Regulations provide authority to prohibit unacceptable practices. With transportation of animals, the goal is to minimize potential adverse effects of transportation on animal health and welfare that will result in undue suffering or injury to the animals. In the case of food animals, we also recognize the link between animal health, animal welfare and food safety.

Why change? Smart regulation

The need to update regulation does not mean that industry is doing a bad job. The current regulations were created in 1970s and lack current context:

- Long distance transport has become more common than previously.
- Regulations insufficiently address the needs of all species.
- When regulations were created, they primarily addressed cattle.
- Today, a broad range of species, induding exotics, are routinely transported.
- The science regarding animal physiology, welfare and health has evolved, making certain current requirements inadequate.

While Canadian regulations are consistent with international standards, some areas need improvement such as those pertaining to feed/water/rest intervals and loading density.

What we proposed

The following is a summary of the proposed changes:

1. ***Definitions*** - clarify terms and provide additional detail.
2. ***Compromised and non-ambulatory animals*** - provide more practical descriptions of the conditions that render compromised animals unfit for transport.
3. ***Feed, water and rest intervals*** - define these intervals to better reflect animal needs.
4. ***Transport of animals at sea*** - changes in ship construction and industry practices, such as the use of roll-on/roll-off ferries, need to be reflected in the regulations.
5. ***Segregation*** - improve the current requirements.
6. ***A requirement for staff training*** - to increase the likelihood for a positive transport outcome.
7. ***Loading density standards*** - for certain species or classes of animals.
8. ***Consistency in enforcement*** - CFIA strives towards a Canada-wide consistent application of the regulations in its day-to-day inspection activities.

What you told us

Most of the areas that CFIA had identified as being in need of modernization did not cause significant controversy. However, topics such as the requirement to train staff that handle live animals and the idea of prescribing maximum loading densities prompted more diverse responses.

The most contentious issue was re-defining time periods that animals - notably food animals - can be transported without feed, water and rest. As result of comments received, the CFIA is modifying the regulatory amendment to convert the prescriptive food water and rest intervals to outcome-based standards.

Conclusion

The resulting proposed regulations are based on clear and concise directions, which allow the regulated parties the flexibility to adapt to changing conditions and new technologies. A balance of performance based, goal based and prescriptive regulatory elements should allow for flexibility, good judgment and experience to achieve desirable transportation outcomes.

• International Roundup

FDA OKs cloned animals but Smithfield says no

The US Food and Drug Administration has recently approved the marketing and consumption of meat and milk from healthy cloned animals and their offspring. A 968-page final risk-assessment report concludes that these foods are as safe as those from ordinary animals and do not need special labels. The decision applies to cattle, pigs and goats. Predictably opponents to cloning reacted strongly, with the Humane Society of the United States saying "FDA's reckless action is completely unwarranted and unacceptable."

Prior to the report's publication, US pork producer Smithfield Foods said that it would not produce or use pork from cloned animals. It says the technology is, as yet, unproven and requires further investigation. Smithfield is among a growing number of businesses that have rejected cloning, however, the controversial technology does look set to become a key feature of food production in the USA.

There are no signs that US consumers are embracing the idea of food produced through cloning. A recent national survey commissioned by the International Food Information Council (IFIC), found that 50% of American consumers have an unfavourable view of cloning, while 28 percent remain neutral. Campaigners, such as the Center for Food Safety, say that it is these concerns that have prompted food firms to confirm their opposition to this technology.

A recent survey by the Consumers Union also found that 89 percent of Americans want all food produced from cloned animals to be labelled.

USDA raises pork export forecast

The USDA has upped its 2008 pork export predictions, saying in its November Outlook for US Agricultural Trade report that 2008 US pork exports are forecast to hit a record volume of nearly 1.1 million metric tonnes valued at $2.7 billion, up from the August forecast of 1 million metric tons valued at $2.6 billion. Record hog slaughter, a weak US dollar and low US hog prices all contributed to the revision.

China plans massive new production system

China is to set up its largest pig breeding operation in Hubei Province. The project is a major cooperation between China Oil and Food Corporation (COFCO), the country's largest oil and food importer and exporter, and the Hubei provincial government.

With an investment of 9.7 billion yuan, or 1.3 billion US dollars, COFCO plans to build a system with 500,000 breeding pigs. When completed, it will be capable of producing and processing 10 million pigs each year.

COFCO says it will cooperate with its foreign counterparts and introduce international expertise in managing the operation, which will have subdivisions responsible for breeding, disease control and pork food research and development.

Danes trace pigs without a tattoo

The Danish Meat Research Institute has developed a method that guarantees pig traceability without the need to tattoo prior to shipping. This new method will save pig producers much effort in the future and remove the discomfort for pigs, according to the Danish Meat Association.

The new system involves the dispatch of pigs to the slaughter plant in groups. Normally in Denmark pigs are transported in groups of 15. Upon arrival at the plant, the truck driver enters the delivery details into a computer terminal. The origin of the group is immediately noted by an electronic data system.

The pigs are sent to slaughter in groups of 7 or 8 and this procedure is electronically monitored. A scanner checks each belt to ensure that it is empty before dispatching the next group of pigs to slaughter. Most Danish plants now carry out group stunning using CO_2. After slaughter, microchips in the gambrels on which the carcases hang provide full traceability as they move through the plant.

Danish Crown has pioneered the use of such a system in its slaughterhouse in Esbjerg. According to Carsten Damgaard of the Danish Meat Research Institute, Danish Crown employees have been working with the system for two years but it still requires a little fine tuning.

Damgaard explained that the operator is able to monitor on a screen the pens in which pigs from any particular producer are kept. "It is basically a modern warehousing system. In the future, pig transporters can be informed which slaughter facilities have the most capacity at delivery time by using such a system."

Colorado pork producers announce transition to group sow housing

Pork producers in Colorado have announced that they will begin to phase in group-housing systems for gestating sows during the next 10 years. More than 90 percent of the sows in the state will be impacted by this initiative, including some large-scale production systems such as Seaboard Farms, Midwest Farms and Murphy-Brown.

"Although animal welfare experts and professional groups have found no one method of housing gestating sows that is clearly better than the other when managed properly, some concerns have been voiced about the use of individual stalls for pregnant sows," says Ivan Steinke, executive director of the Colorado Pork Producers Council. "Individual stalls, the standard practice used in the swine industry, are used to provide for the health, safety and well-being of individual gestating sows."

"To address public concerns and changing market conditions, Colorado's pork producers will embark on a 10-year phase-in that will allow producers to thoroughly evaluate and determine the best animal welfare practices for group housing," says Steinke. "Because individual stalls continue to be the industry standard, producers may need to reconfigure their farms, acquire new equipment and staff appropriately in order to provide the best animal care with group housing systems."

Ballot initiatives in Florida and Arizona banned sow gestation crates in 2002 and 2006, respectively. An Oregon law banning sow gestation crates after a six-year phase-out took effect in

January 2007. However, Florida, Arizona and Oregon have very little pork production, whereas Colorado is the USA's 15th largest pork producer. It is likely that the state's pork producers took this initiative in order to pre-empt a possible move to introduce legislation banning sows stalls with a short transition period as in Oregon.

Hormel's Farmer John to sell sows in California

Hormel Foods' Farmer John business unit is selling about 9,000 sows and getting out of the hog breeding business in California, It will transition to a solely finishing operation by October.

"The market has grown increasingly competitive and the rising cost of feed and fuel is making it that much more difficult for livestock operations to compete," spokesman Steve Duchesne said in a telephone interview with Meatingplace.com.

He also said an increasingly difficult regulatory environment in California played into the decision. "We could not fool ourselves into thinking the regulatory environment would become any more favourable," he said, citing an upcoming ballot initiative expected in California's November election to ban sow stalls, field crates and battery cages.

From October, Farmer John will source pigs to finish in California from its existing farms in Wyoming and Arizona, which house 14,000 sows and 13,500 sows respectively.

No additional water needed by liquid-fed pigs

Finisher pigs on liquid feeding are not more motivated to drink water from an extra water bowl than those fed on dry feed, according to the results of a recent study by the Dutch Livestock Boards for Livestock, Meat and Eggs (PVE).

Finishers that are given liquid feed with 25% dry-ingredient content absorb more water than they require physiologically. However, European regulations stipulate that pigs 'must have access to water all the time'.

The study investigated the motivation of finishers to drink more water, which was measured by providing an extra water bowl in the pen. The water flow rate was changed on a weekly basis between 130, 360, 730 and 1040 ml/min. If the pigs drank more water at a lower flow rate, this was considered a measure of motivation.

Three liquid feeding systems were used and results were taken from 48 pens, each with 12 pigs. In total, the pigs fed on liquid feed used 7.3 litres water per day and the pigs fed on dry feed 4.7 litres, including water from feed. Consumption from the extra drinking bowl amounted to 0.6 and 3.4 litres per day respectively. At the lowest flow rate, the pigs drank less – around 0.3 to 1.9 litres per day.

The study concluded that pigs fed on liquid feed are not motivated to drink more water than those on dry feed. In addition, the level of water consumption of pigs fed on liquid feed is so low that the addition of a water bowl brings no advantages, says the report. WHJ

• Events Diary

March			
8-11th	**American Association of Swine Veterinarians (AASV) Annual Meeting**	San Diego, California	www.aasp.org/annmtg/ Contact: (515) 465-5255
12-13th	**Alberta Pork Congress**	Red Deer, Alberta	www.albertaporkcongress.com Contact: (403) 244-7821
31st – 2nd April	**British Society of Animal Science Annual Conference 2008**	Scarborough, UK	www.bsas.org.uk Contact: +44 131 445-4508
April			
1-2nd	**London Swine Conference**	London, Ontario	www.londonswineconference.ca Contact: Linda Dillon 519 482-3333
20-23rd	**24th Alltech International Feed Industry Symposium**	Kentucky, USA	www.alltech.com
24-25th	**2008 Swine Breeding Management Workshop**	Edmonton, Alberta	www.afns.ualberta.ca/Hosted/SBMW/ Contact: Sue Charlton (780) 237-1033
May			
13-14th	**British Pig & Poultry Fair**	Stoneleigh, UK	www.pigandpoultryfair.org.uk Contact: Alice Bell +44 2476 858 276
27-29th	**VIV Europe**	Moscow, Russia	www.viv.net Contact: +31 30 295 2772
June			
5-7th	**World Pork Expo**	Des Moines, Iowa	www.worldpork.org Contact: John Wrigley (417) 451-6004
18-19th	**Ontario Pork Congress**	Stratford, Ontario	www.porkcongress.on.ca Contact: (519) 625-8811
18-20th	**Pan Pacific Pork Expo & Uptake 2008**	Queensland, Australia	www.apl.au.com/pppe Contact: Natalie Wimmer +61 2 6285 2200
22-25th	**20th International Pig Veterinary Society Congress**	Durban, South Africa	www.ipvs2008.org.za Contact: +27 31 3321451
22-29th	**Advanced Swine Production Technology Course**	Illinois, USA	www.livestocktrail.uiuc.edu/porknet Contact: Gilbert Hollis (217) 265-9191
September			
20-23rd	**Allan D Leman Swine Conference**	Minnesota, USA	www.cvm.umn.edu Contact: (800) 380-8636 or (612) 624-3434
30th – 2nd Oct.	**Pork Expo Brazil 2008 & IV International Forum on Swine Production**	Parana, Brazil	www.porkexpo.com.br/index.php/pasta/2/ Contact: +55 3888-2077
October			
20-22nd	**VIV China 2008**	Beijing, China	www.viv.net Contact: +31 30 295 2772
November			
11-14th	**EuroTier**	Hanover, Germany	www.eurotier.de
December			
3-4th	**Hog and Poultry Days**	Winnipeg, Manitoba	www.hogandpoultrydays.com
2009			
January			
20-23rd	**Banff Pork Seminar**	Banff, Alberta	www.banffpork.ca Contact: Ruth Ball (780) 492-3651

Please let us know details of any events you would like to see listed above – call Bernie Peet on (403) 782-3776 or email whj@albertapork.com

AD INDEX