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SUMMER 2009

Western Hog Journal

IN THIS ISSUE:

- **Practical feed budgeting – a producer's take**
- **Creep feeding – latest thoughts on presentation**

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TRAIT	GENESUS 49 FARMS AVERAGE ALL	SMS 585 FARMS AVERAGE ALL	DIFFERENCE
Pigs weaned / Mated female / Year	26.78	23.30	3.48
Litters / mated female / year	2.45	2.36	0.09
Wean 1st Service Interval	6.45	7.01	-0.56
Female Death Loss	5.7	7.7	-2.0
Farrowing rate (%)	87.8	82.8	5.0
Weaned / female farrowed	11.06	9.95	1.11
Total born / female	13.56	12.59	0.97
Born live / female	12.25	11.42	0.83

Of the entire SMS database of 585 farms with 1,175,053 sows Genesus was the #1 herd and the only herd with over 30 p/s/y. Genesus also held 8 of the top 9, 12 of the top 15, and 15 of the top 20 spots for p/s/y.

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Western Hog Journal

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COVER PHOTO

Over 500 people attended a pork industry support barbeque in Red Deer, Alberta on May 22nd.

WEBSITES OF INTEREST

PROVINCIAL ASSOCIATIONS

Alberta Pork	www.albertapork.com
Saskatchewan Pork	www.saskpork.com
Manitoba Pork Council	www.manitobapork.com
Nova Scotia Pork	www.pork.ns.ca
Ontario Pork	www.ontariopork.on.ca
PEI Pork	www.peipork.pe.ca

NATIONAL ASSOCIATIONS

Canadian Pork Council	www.cpc-ccp.com
Canada Pork International	www.canadapork.com
National Pork Producers	www.nppc.org

MARKETING ASSOCIATIONS

Manitoba Pork Marketing Co-op Inc.	www.mpmc.mb.ca
SPI Marketing Group Inc.	www.spimg.ca
Western Hog Exchange	www.westernhogexchange.com

OTHER SITES OF INTEREST

Banff Pork Seminar	www.banffpork.ca
Lacombe Research Centre	http://res2.agr.ca/lacombe/
Prairie Swine Centre	www.prairieswine.com
U of A	www.afns.ualberta.ca
VIDO	www.usask.ca/vido

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• Editor's Notes

Just as the pork industry was looking forward to a renaissance in its fortunes this summer, along came the so-called swine flu, a name which although incorrect, became associated with pigs and, by implication, pork. Despite the fact that there is no evidence that the virus originated in pigs, or the fact that it cannot be transmitted by eating pork, demand was affected and the price paid for hogs plummeted. The mainstream media once again showed its propensity for sensationalism by reporting the Influenza A-H1N1 outbreak as a pandemic waiting to happen that could result in millions of deaths worldwide. Speculation that the outbreak in Mexico stemmed from pigs at a facility jointly owned by Smithfield was actively encouraged by groups hostile to large scale livestock production. Scientific testing soon proved this not to be the case, but the damage was done. Even the well-respected World Health Organization fanned the flames of doubt in consumers' minds by saying that people should not eat meat from sick or dead pigs; a practice that, as pork producers, we know is not carried out. Despite a hasty withdrawal, once again, the damage was done.

This situation, both at home and overseas, shows the damage that can be done to an industry by a lack of understanding of the facts by the general public, exacerbated by scaremongering media coverage. To put things in perspective, by the beginning of June, the H1N1 flu virus had been confirmed in 20,000 people in 68 countries, killing at least 126, according to the World Health Organization. So far, it appears it is less virulent than "regular" flu. Now compare this with the number of people killed in road accidents in Canada alone during the same period, about 240. Not only is the risk of contracting and dying from this strain of influenza minimal, but being infected from pork is impossible.

When the situation returns to normal, we must ask ourselves as an industry what we could have done better to counter the misinformation and minimize the impact of another occurrence such as this. The misnaming of this disease as swine flu has severely damaged our industry just when it is already in a vulnerable situation.

Barrie Peck

WHJ

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[1] Patience, J. et al. 2006. "Effect of Ractopamine in Finishing Swine Diets on Growth Performance, Carcass Measurements and Pork Quality." Prairie Swine Centre Inc. Data on file.

11-11-0218-01212009

Vast majority of Canadians prefer to eat locally sourced foods

Almost nine out of ten Canadians (86 per cent) indicate that they prefer to eat locally sourced foods, according to the recent Real Food Survey commissioned by Hellmann's. The poll was conducted to gauge the eating habits of Canadians and the results indicate that the real food movement is gaining momentum across the country.

According to the poll, six out of ten Canadians say that they eat more locally sourced food today than they did just two years ago. Awareness levels about where food is being produced also appear high, with 71 percent saying that they read labels and packages to see where their food is produced, and 68 percent that they always pay attention to the origins of the food they eat.

In addition to eating more locally sourced foods, Canadians also say they are willing to pay more in order to do so, with 77 percent of respondents saying that they are willing to spend more on a locally produced item versus something similar that's been imported from another country.

When asked where they consider "local food" to be produced, Canadians top answers included "From Canada", "From my province", "From my Backyard", and "From a farmer's market". Sixty percent also said that they consider packaged goods made with Canadian ingredients to be local food.

There are a number of reasons Canadians cite as to why they are choosing to eat locally sourced foods, with the most popular opinions being:

- "Supports the local economy/keeps farmers in business" (45 percent);
- "Food is fresher" (43 percent);
- "Food is better for you" (20 percent);
- "Better for the environment" (19 percent)

The survey results also showed that 68 percent of Canadians say that locally sourced foods taste better than those grown farther away. When asked which food from their provincial ecosystem Canadians would choose to support over all others, the top three results were apples (14 per cent), beef (13 percent) and potatoes (11 percent). Paying attention to the origins of where food is produced increases steadily with age, with only 52 per cent of people aged 18-24 paying attention vs. 76 percent of those aged 50 plus. Also, women are 10 per cent more likely than men to say that they eat more local food now than two years ago (64 to 54 percent).

Sturgeon Valley Pork to employ DNA-based traceability system

Sturgeon Valley Pork, a St. Albert, Alberta-based processor of fresh pork, has announced it will use a DNA traceability system that can trace its pork from the grocer's meat case all the way back to the processing plant and farm of origin.

The company is using a meat tracking system called DNA TraceBack®, developed by IdentiGEN, Inc., that has been used in Europe since 2000. Under the system, DNA samples will be taken from Sturgeon Valley hogs at the processing plant and sent to IdentiGEN's laboratory, where their unique DNA identifiers will be used to verify product origin. Once the program is implemented, pork from Sturgeon Valley will display IdentiGEN's DNA TraceBack seal at the retail meat case.

"The DNA TraceBack program helps link Sturgeon Valley producers directly with the consumer. Because it is based on sound science, it provides an added assurance that helps us build trust with our customers," said Dan Majeau, one of the principals at Sturgeon Valley Pork.

Dennis McKerracher, IdentiGEN's Canadian representative based in Alberta, is working with Sturgeon Valley Pork to implement DNA TraceBack at its plant. "IdentiGEN is the world leader in DNA-based identification and traceability systems for the meat industry," he said.

Olds College to offer new meat industry management program

Responding to demand from within a $20 Billion dollar-per-year industry, Olds College has recently added a new Meat Industry Management certificate to its curriculum. Upon commencing, it will be the only true gate-to-plate program of its kind in North America, giving graduates a comprehensive understanding of all aspects of the meat industry from slaughter right through to purchase by the consumer. The certificate will build upon the college's Meat Processing Certificate, renowned for its superior hands-on training and stringent standards regarding sanitation and food safety.

"Safety is always one of the big issues in the industry," says Brad Mcleod, Coordinator of Olds College's meat processing and management programs. "The other big concern is leadership."

The meat sector employs approximately 80,000 people in over 1000 Canadian companies, more than forestry and farming combined according to industry estimates. Growing by about 6000 positions per year, it is the single largest part of the food manufacturing industry and the demand for qualified, knowledgeable employees is stronger than ever.

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The program commences in the spring of 2010 and will be 15 weeks in length. For further information, contact Rick Overwater on 1-800-661-6537 or email roverwater@oldscollege.ca

Benchmarking data shows Genesus herd number one with 30.8 pigs

Swine Management Services, LLC (SMS) of Fremont, Nebraska USA, the world's largest swine benchmarking service, recently released their Production Index for 2008. The database encompasses 585 farms and 1,175,053 females with significant participation from customers of every major swine genetic company.

The average for all herds was 23.30 pigs weaned per sow per year, while the top 10% of herds' averaged 27.31 pigs/sow. Genesus Genetics Inc. customers had the number one herd at 30.80 in 2008, which was the third consecutive year at the top. Genesus Genetics supplied 8 of the top 10 SMS herds and 15 of the top SMS 20 herds recorded by SMS.

The Genesus SMS Full Genetic Report can be viewed and downloaded at http://www.genesus.com/cms/assets/Uploads/SMSGenesusSystemBenchmarking-2008.pdf

Hypor announces new alliances and purchases

International swine genetics company Hypor has made a string of announcements over the last few months as it continues to expand its business, both in Canada and overseas.

In China, it has entered into a genetics program arrangement with AgFeed Industries, Inc. one of China's largest pre-mix feed companies and the country's largest independent hog producer.

Hypor's Shandong Liuhe Nucleus Farm will stock AgFeed's 1200 sow Jiangxi Lushan Breeding farm with Large White Pureline Sows, Landrace Pureline Boars and the Duroc Terminal Sire. The restocking of the farm is key to AgFeed's strategic development plan of producing and selling approximately 2,000,000 hogs into the Chinese market during 2010-2011.

In Canada, Hypor has entered into a strategic alliance with newly incorporated Mid-America Genetics International Incorporated (MAG), a Manitoba based genetic company. The partnership will see the development of a new commercial female by combining the industry leading Hypor Landrace line with the successful MAG Large White line.

While offering Hypor a unique multiplication opportunity and larger market reach, this alliance is a perfect fit given the commitment and common values of both Hypor and MAG to the North American producer and specifically the Hutterian Brethren, says the company.

"This unique alliance provides MAG with a strong Landrace line which allows us to continue to focus on our successful Large White program" said Richard Rex, General Manager of MAG. "It was seen as a natural fit to repopulate our 1200 sow production unit with high health purebred Hypor gilts." The MAG-Hypor gilts will be sold under the MAG brand name, MAGlink.

Hypor Inc. has also announced that it will purchase the purebred nucleus herd of Ontario based, purebred Duroc breeder, Shade Oak Swine Ltd. including all AI boars owned by Shade Oak and located at various third party AI stations. Additionally Hypor will enter into a distribution agreement with Shade Oak's boar stud division known as Total Swine Genetics (TSG).

Gerjan van Alst, General Manager, Hypor North America, says the purchase of the Shade Oak Swine herd is a perfect fit with the Hypor terminal sire line program and strategy. "For almost 25 years, Shade Oak Swine has been totally focused on the development of their Duroc terminal sire lines," van Alst said. "Like Hypor, Shade Oak Swine believes in the value of using the most advanced testing and breeding evaluation programs available to produce sires that meet the needs of both producers and processors."

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The ownership and operations of Total Swine Genetics (TSG) AI stud are not affected by this transaction. Hypor will continue to supply Shade Oak genetics to TSG.

Pork Marketing Canada launches new website to show pork fits every lifestyle

Porkfits.com is an exciting new website launched to show how pork fits on everyone's plate. The website is part of Pork Marketing Canada's latest consumer campaign intended to turn a younger generation onto pork. Research shows that 25- to 35-year-olds are not currently eating pork, highlighting a significant threat to the industry. The website is just one element of the campaign that will tempt young adults to add pork to their diet – a critical step in ensuring a healthy future for pork consumption.

The new website offers a fun, interactive experience and acknowledges the target consumer is busy with lots of things on her figurative plate. Visitors to the site are asked "what's on their plate?" – options include soccer practice, a new baby, school work and mortgage payments among others. Based on their selections, the website's recipe finder generates five customized pork dishes for the user that are tasty, easy and inexpensive to prepare.

The recipes have playful names to further demonstrate pork's fit. "Just-left-work-and-need-dinner-on-the-table-in-30-minutes pork picante" and "Pennies in my pocket pork chops" are two of the 60 mouth-watering dishes in the website's database. Porkfits.com is kept fresh by featuring a themed recipe each month, starting with a tribute to Mother's Day and "Mom's gonna love it lemony pork."

All of the recipes can be printed or shared via email, Facebook, Twitter and more. Visitors will be driven to the site through online ads, search engines such as Google, ads in Flare, Glow, Today's Parent and Chatelaine as well as a soon-to-be launched 'word of mouth' campaign.

Porkfits.com is complementary to PMC's main website (PutPorkOnYourFork.com) which targets consumers who are already pork savvy.

Manitoba Hutterite Colony showcases new standard in sow housing

By Myron Love

On Thursday, April 16th, the relatively newly established Eagle Creek Hutterite Colony held an open house to showcase a new standard in sow housing. "There were about 1,000 people who came to see the new barn," says Kevin Kurbis, co-owner of New Standard Ag Inc., the company that designed and outfitted the facility. "Most people in the industry recognize that loose housing is the way that the industry is going - either by choice or by legislation. People were interested in seeing what we did here."

Kurbis and his brother, Tim, founded New Standard three years ago. Both brothers have had extensive experience in outfitting hog barns. Kevin Kurbis, who is based just north of Selkirk, reports that he began working with the Eagle Creek Colony on the new barn and sow housing system back in January, 2007.

The building, which can accommodate 1,000 productive sows, supplies the highest quality in construction, ventilation, penning and feeding technology, Kurbis notes. Initially, the barn will be housing three groups of 250 gestating sows with 48 being

removed per week for farrowing. The lay-out of the barn was set up in such a way that the group housing can run as one dynamic group or as 3 smaller dynamic groups, each with their own separation-unit.

Nedap Agri provided the equipment for the group housing system. Eighteen Nedap Velos ESF (Electronic Sow Feeding) stations provide individual feeding for the pregnant sows from 3-4 days after insemination throughout the pregnancy. "Nedap is an industry leader in sow housing systems," Kurbis says. "The equipment that we installed in the Eagle Creek barn shows that Nedap is staying ahead of the curve." There are less moving parts in the new system, Kurbis notes, and the system allows the producer to put several stations together and still separate out sows using the central separation unit.

The system employs two feed types that can be used to provide the best formula for every sow, Kurbis explains. Three Nedap-Velos heat-detectors provide a constant monitoring on sows returning into heat, immediately marking them with a colour. A separate Nedap ESF station is positioned in a gilt group to provide a continuous flow of well trained gilts.

CAWI Canada supplied the equipment for the ventilation system, which requires the highest standard in this humid continental climate-zone. Throughout the building, chimney fans combined with controlled air inlets ensure both correct air quality and movement.

The CARAS feeding system ensures an equal supply of small portions of fresh feed throughout the day to the weaned piglets. A permanent built-in circulation system provides additional milk to each farrowing crate.

Kurbis notes that New Standard Ag is currently working with several other Hutterite colonies as far away as South Dakota to install the system. "We have another four or five hog producers who have shown interest," he says.

New funding for Alberta's livestock and meat sector

A $30-million catalyst package aimed at spurring innovation and diversification in Alberta's livestock and meat industry has been announced by the Alberta Livestock and Meat Agency (ALMA).

Five new grant programs will be delivered by ALMA. They focus on international market development; value-added market development; research and development; industry development; and on-farm technology adaptation. The programs will help achieve the goals of the Alberta Livestock and Meat Strategy (ALMS), a comprehensive plan designed to return the livestock and meat industry to profitability and competitiveness.

"This marks a major milestone for the strategy and new opportunities for our livestock and meat industry," said George Groeneveld, Minister of Agriculture and Rural Development. "The programs will help industry create a profitable and sustainable future by providing support for new initiatives and research that will increase our competitiveness in the global market."

Grants will help producers and their organizations accelerate international marketing, explore domestic markets, research

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environmental management, target consumer awareness or stimulate leading-edge research developments.

ALMA Board Chair Joe Makowecki said: "Our ALMA mandate is to act as a catalyst and these programs show our commitment to moving our $4.3-billion livestock and livestock products industry forward."

Darcy Fitzgerald, formerly General Manager of the Alberta Livestock Industry Development Fund (ALIDF) is leading this initiative as Director, Industry Developments at ALMA.

Applications for the new programs will be accepted starting May 1. For more information on the programs and application process visit alma.alberta.ca

Manitoba hogs take to the air

By Myron Love

On Wednesday, May 27, a spanking new Boeing 777 cargo jet took off from James Richardson International Airport in Winnipeg with a load of 660 live hogs destined for a major hog operation near Krasnodar in southern Russia. This marked the first time that live hogs have ever been flown directly out of Winnipeg. The 777 flew the hogs to Germany where they were transferred to trucks for the rest of the journey to the breeding facility in Russia.

The new Boeing 777 that flew 660 pigs to Russia for Genesus

In the past, the hogs would have been trucked to Toronto for the flight out, notes Mike Van Schepdael, executive vice-president of Manitoba-based Genesus Inc., which shipped the live hogs out. "Being able to ship our hogs directly out of Winnipeg takes two days off the trip," he points out. "It saves us time and money and is a lot easier on the pigs."

The new service is being provided by Sea Air International, a company based in Toronto, which recently acquired the new 777. "We are told that this plane was the third 777 off the Boeing assembly line, Van Schepdael says. "It cost $200 million. It's quite the machine."

This was one of four loads of 660 live hogs each that Genesus is shipping to the breeding facility in southern Russia. The next one was scheduled to fly out of Winnipeg in mid-June or early July.

Genesus Inc., Van Schepdael says, is the largest producer of registered, pure bred swine breeding stock in Canada. The company accounts for 40% of the registered pure bred and F1 gilts produced in the country. "We have been dealing in Russia for a couple of years now," Van Schepdael says. "We have another customer in Russia who has ordered several loads of 800 live hogs and there are more to come."

Workshop will focus on practical management

Speakers at the forthcoming Red Deer Swine Technology Workshop will be focussing on practical management related topics aimed at increasing productivity and profitability. Topics include "Optimizing sow lifetime condition", "Getting the best from natural service boars", "How to maximize piglet weaning weight" and "Giving a good start to the newly weaned pig".

Following the huge success of the "Maximizing piglet survival" video showcased at the 2008 workshop, a new video titled "Maximizing grow-finish margins" is being produced for the 2009 event.

"The workshop continues the one-day format that was so popular with delegates last year," says Bernie Peet, the Workshop Manager. "However, we will be moving the event to a new location at the Exhibition Centre at the Capri Hotel in Red Deer."

"Despite the challenges faced by the industry, we had an attendance of 200 last year and that reflected the hands-on approach of our speakers, who were all people with extensive practical experience and a proven track record," says Peet. "This year, we are taking the same approach and have a very strong panel of speakers."

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

Correction

The phone number for Precision Management on page 54 of the May 2009 edition should have read 403 796 7675. For further information re "Contract Finishing Available in Alberta", please call that number.

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• People in Pork

New interim manager at AFAC

Alberta Farm Animal Care (AFAC) Association has announced that Jim Haggins has taken up the position of interim manager, following the retirement of Susan Church. He took up the position effective May 4. "We are pleased to fill this position so quickly to ensure a smooth management transition. Jim will also work with us to develop future strategic direction for AFAC," says AFAC chairman, Doug Sawyer.

"Jim brings to AFAC a wealth of experience, knowledge and contacts, having worked in Alberta's poultry and pork industry for several years. He has maintained an active interest in AFAC since its inception and has a strong understanding of its priorities and programs," adds Sawyer.

Jim was raised on a mixed farm in SW Ontario and has a B.Sc. (Agr) from the University of Guelph (Animal Science). He spent several years in the livestock feed business and 20 years in the poultry business, commercial egg production, hatching egg production, broiler production and owned and operated a hatchery for 9 years. Since 1996 Jim has been involved in the pork industry working with Pig Improvement Canada, Sunterra Farms, Cotswold Swine Genetics and PIC Canada.

Fast Genetics announces two appointments

Fast Genetics has announced the addition of Mr. Phil Dykstra to their management team as Sales and Multiplication Manager.

Mr. Dykstra will complement a strong team of management personnel at Fast Genetics and will lead the sales efforts of the company going forward. He will also be focusing on growth and development of the Fast Genetics multiplication system as the company plans for growth over the next 5-10 years.

Originally from a mixed livestock farm in Ontario, Mr. Dykstra obtained a Diploma in Agri-Business at the University of Guelph. Since that time he has spent over 20 years in the livestock industry. Mr. Dykstra's history includes senior leadership roles within the following companies over the last number of years; The Pork Corporation, Elite Swine Inc., and Big Sky Farms Inc.

The company has also announced the appointment of Jerrod Lynott to its team as a full-time technical sales representative for its US operations based out of Nebraska.

Mr. Lynott will complement a strong team of existing sales and service representatives within the Fast Genetics system in the United States and will be focusing on growth and development of the Fast Genetics brand in Iowa, Minnesota, South Dakota, and Nebraska.

Originally raised in Northwestern Iowa, Mr. Lynott obtained a Bachelor of Science in Agriculture majoring in Animal Science at South Dakota State University. He brings over 10 years of experience in the swine genetics business with extensive knowledge of sow and finishing production systems in the Mid-West via involvement in the industry at multiple levels.

New faces at Alberta Feed and Consulting

John Drost has joined Red Deer, Alberta based Alberta Feed and Consulting Ltd. as territory manager for feed sales and customer service. He brings a wealth of technical knowledge and experience to this position, having spent most of his career working the animal feed industry in Alberta. John started as a mill operator, then worked in sales, nutrition and finally as the general manager of Alberta operations for a major feed company. More recently he was a breeding stock consultant for PIC customers in Alberta.

John's keen interest in the swine industry is demonstrated by his involvement in the Alberta Pork Congress, serving as director and later as president. John also served as a director and chairman on the board of directors for ANAC Alberta. More recently he served on the planning committee of the Red Deer Swine Technology Workshop.

Kristen Spitzke has also joined the company to work with nutritionist Sam Jaikaran. A graduate of the University of Saskatchewan, with a major in Animal Science, she was born and raised on a beef operation where she has gained an enormous amount of practical experience. She has a keen interest in food animal production and reproductive performance in all agricultural species. Kristen was the recipient of the 2009 Alberta District ANAC award for demonstration of interest in the nutrition of livestock and poultry.

John Wiebe named IMV Business Development Manager with Gencor

John Wiebe has been appointed IMV Business Development Manager, to the Gencor IMV division. His role will primarily be focused on the swine industry; maintaining and supporting existing accounts as well as creating new business opportunities.

Wiebe has an impressive background coordinating sales and service activities internationally and has been involved in promoting integrated nutrition programs and products for the beef, swine and dairy industries. He has completed studies at Laurentian University and most recently completed a Master of Science degree at the University of Guelph.

As the primary contact for Gencor's IMV business, Wiebe will assist customers with technical advice and product information. For more information please contact John Wiebe on 226-820-1633 or email: jwiebe@gencor.ca

≡WHJ≡

• New Product Showcase

Safe and natural fermented soy now available in Canada

Pro-Ag Products Ltd., a leading supplier of feed ingredients, feed additives and animal health products throughout Canada, announced that PepSoyGen®, a naturally enhanced soy-based protein, has been approved for use by the CFIA and is now available for swine feeds.

PepSoyGen® is a new protein source produced from solid state fermentation technology that eliminates the anti-nutritional factors found in soy. The all-natural manufacturing process increases the protein content in PepSoyGen® to 55%, while fermenting agents are retained in the final product, providing valuable sources of direct-fed microbials.

PepSoyGen® is manufactured by Nutraferma® in North Sioux City, South Dakota, USA. The new fermentation facility is the first of its kind in North America and has been in operation since May 2008.

PepSoyGen® was developed to create a functional, soy-based product ideal for inclusion as a primary protein source for piglet diets. University trials have shown PepSoyGen® elicits piglet performance equal to or greater than fish meal, plasma, dried skim milk or traditional soybean meal.

For further information, contact Pro-Ag Products at their Winnipeg office, 1-800-806-2737, for complete product specifications and copies of university studies.

Vétoquinol launches new software for precise water medication

Vétoquinol Canada, based in Lavaltrie, Québec, has launched *Vétoquinol Precision,* a new software developed for swine and poultry producers. It was designed specifically to simplify the management and administration of soluble veterinary powders used in swine and poultry populations. *Vétoquinol Precision* provides producers with very specific formulas for the preparation of stock solutions, based upon a wide range of criteria, resulting in optimal levels of medication in the treatment of animals.

"There are so many factors to consider in the preparation of stock solutions, such as age, weight as well as the number of animals. These are often a puzzle for the producer," explains Dr. Claude Thibault, DVM, head of Technical Services, Vétoquinol Canada. "*Vétoquinol Precision* is a user-friendly calculator that will allow the producer to tailor the soluble powders administration to their particular production. In addition to making the mixture easier to prepare, *Vétoquinol Precision* optimizes the efficiency of the treatment, thanks to its increased accuracy."

Provided by Vétoquinol Canada at no cost *Vétoquinol Precision* can be downloaded through the www.solublepowders.com web site. The software provides

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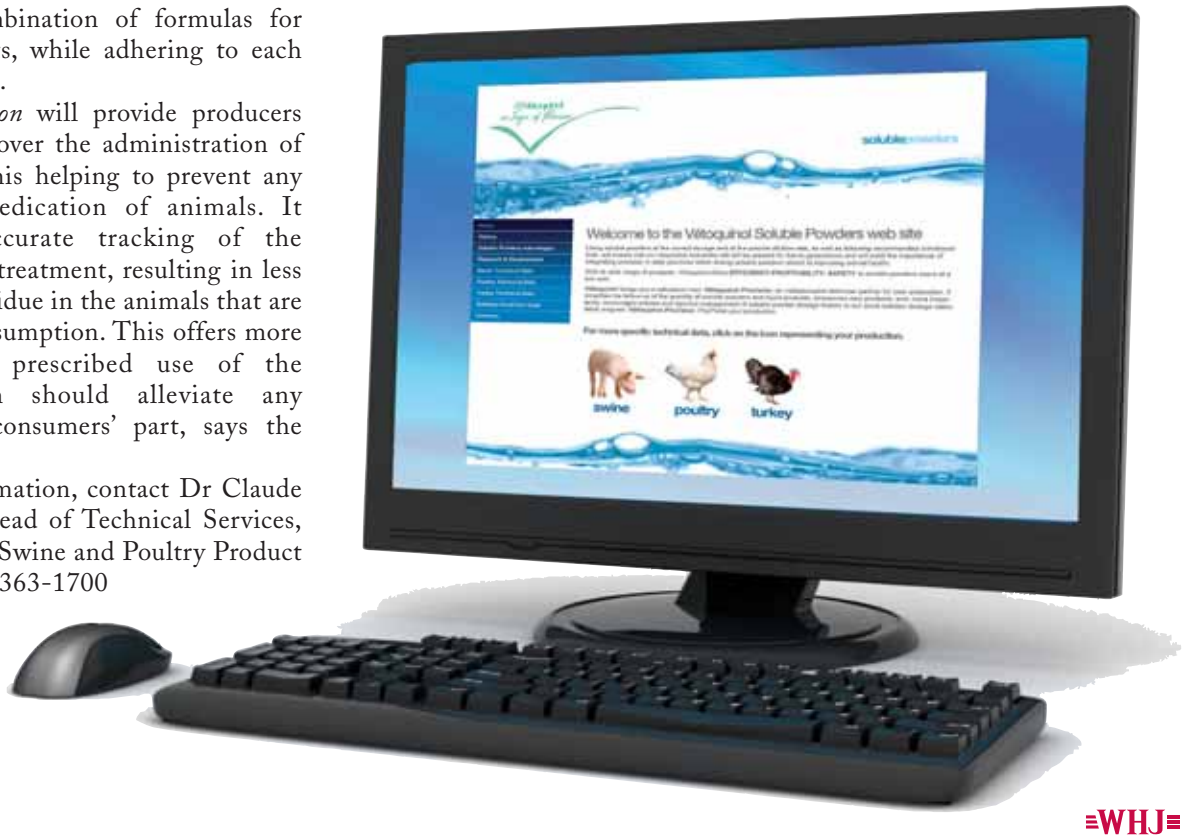
every possible combination of formulas for Vétoquinol products, while adhering to each product's indication.

Vétoquinol Precision will provide producers with more control over the administration of soluble products, this helping to prevent any over- or under-medication of animals. It provides more accurate tracking of the prescribed medical treatment, resulting in less risks of violative residue in the animals that are slaughtered for consumption. This offers more precision to the prescribed use of the medication which should alleviate any concerns on the consumers' part, says the company.

For further information, contact Dr Claude Thibault, DVM, Head of Technical Services, or Daniel Darragh, Swine and Poultry Product Manager on 1-800-363-1700



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• Eye on Research

At what age should gilts be exposed to boars?

Much of the work determining age at puberty in gilts was completed decades ago, but since that time pigs have become leaner and later maturing. However, much of the research regarding attainment of puberty has not been repeated to determine how onset of puberty may have changed over time. Recently a large study carried out in Brazil evaluated gilt age at initial boar exposure in relation to attainment of puberty.

This study was completed during the start-up of a 2,400 sow farm and 1,486 gilts - 8 of 12 incoming groups - were included. Within 3 days of delivery, gilts were weighed and backfat was measured. Average age at delivery was 147 ± 8.3 days. Oestrus detection commenced within the first 5 days after delivery. The first observed oestrus after delivery was designated as a gilt's pubertal oestrus. Oestrus detection continued after gilts attained their first observed oestrus to determine their recycling rate. Gilts were classified by age at delivery into two groups, Younger (130-149 days of age) and Older (150-170 days of age), and within each age group, growth rate, calculated as weight per day of age (WDA) was classified into three different groups.

There was a difference in age at puberty due to gilt age at initiation of boar exposure. Gilts that began boar exposure at a younger age had a younger age at puberty (162.2 days of age) than gilts that were older at first boar exposure (172.3 days). Within the younger age group, there was also a difference in age at puberty dependent on the gilt's growth rate classification. Gilts that were faster growing were approximately 3.5 days younger at puberty than gilts that were intermediate or slower growing. However age at puberty was not influenced by growth rate among gilts in the older age group.

There was a difference in the synchrony of oestrus onset dependent on gilt age at first boar exposure. Within the first 10 days of boar exposure, 44.5% of the gilts that were 150 to 170 days of age at first boar exposure were observed in oestrus, compared to only 30.9% of gilts that were 130 to 149 days old at first boar exposure. There was also a difference in synchrony of oestrus due to growth rate classification among gilts that were exposed to boars at the younger age. Among faster growing gilts, 38.1% were observed in heat compared to 28.5% of those that were classified as intermediate or slow growing. This difference in attainment of oestrus persisted through 30 days of oestrus detection. Of the gilts exposed to the boar at 150-170 days of age, 82.4% were observed in estrus after 30 days of boar exposure. However, of gilts that were 130-149 days of age at first boar exposure, only 70.5% had an observed estrus within the first 30 days of heat detection.

Once gilts had exhibited an initial oestrus, 97% also achieved a second recorded oestrus. The percentage of gilts cycling again did not differ between the two gilt age groups. However, there were differences in recycling rate when comparing the three different growth rate groups. Low growth rate gilts (1.2-1.4 WDA) had a recycling rate of 94.3% whereas gilts that were classified as Intermediate (1.43-1.60 WDA) or high (1.61-1.83 WDA) growth rate recycled at a rate of 97.8%.

WHJ comment: It must be assumed that in this commercial situation, gilts were selected for sale from the multiplication herd on the basis of weight, not age. What the study clearly shows is that, irrespective of weight, gilts in the younger age group (130-149 days at boar exposure) averaged about 22 days to first oestrus compared with only 12 days for the older gilts (150-170 days).

Also, more of the older gilts reached oestrus within a given time after boar exposure – 82.4% for the older group compared to 70.5% for the younger gilts. Whether introducing gilts into a new herd or for replacement purposes, predictability of oestrus onset and good synchronization is important in order to achieve the required number of matings per week. Therefore, selecting gilts for boar exposure on the basis of a minimum age would be beneficial in this context. Interestingly, the work carried out on this topic 30 years ago, which is still widely quoted, suggested boar exposure from 160 days of age, so this recent study, supports a threshold age of this magnitude. If gilts are at the required weight, but under this age, it may be advantageous to delay boar exposure for around 3-4 weeks.

Reference: Amaral Filha, WSA, Bernardi, ML, Wentz, I and Bortolozzo, FP, 2009. Growth rate and age at boar exposure as factors influencing gilt puberty. Livestock Sci. 120:51-57.

Response to humans may influence sow performance at farrowing

The classic studies of Paul Hemsworth and his colleagues on the effects of human attitudes and behaviour on animal performance are well known. A recent study suggests that the incidence of crushing piglets could be affected by genetic selection for sow behavioural traits. It assessed the relationship between behavioural responses in the gilt at 6 months of age and around farrowing, comparing this with reproductive performance, including crushing levels. At 6 months of age, behavioural responses of 75 gilts were observed both during behavioural tests to human presence and to the presence of a novel object in their home pen, and their responses when placed in a weighing device. At first farrowing, nervousness of the sows was observed when placed in the farrowing crate 1 week before and on the day of farrowing, as well as their fear responses when approached by a human from behind or at the front of the farrowing crate. At 6 months of age, escape from a human tended to be correlated with the degree of reaction in the weighing device. Around first farrowing, the withdrawal reaction when a human approached at the front was correlated with the fear response when approached from behind and the nervousness of the sow in the crate. The fear response when approached from behind was correlated with nervousness in the crate and around farrowing and nervousness in the crate was significantly correlated with the nervousness around farrowing. The escape response to a human at 6 months was correlated with withdrawal when approached from the front before farrowing and with nervousness of the sow in the crate. The number of piglets crushed at first farrowing was correlated with the delay in approaching a novel object at 6 months and nervousness around farrowing. It also tended to be correlated with the escape behaviour from a human at 6 months and withdrawal away from human presence before farrowing. These

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results suggest that behavioural responses to humans and during management practices of gilts at 6 months of age are, to some extent, related with their behaviour around farrowing and crushing levels of piglets at farrowing.

WHJ comment: This study showed that there are differences in behaviour between individual animals in their response to human presence. In gilts, where one might expect to see the biggest effect, behaviour at 6 months was correlated to the response in the farrowing crate and this had an effect on the number of piglets crushed. This offers the potential for selection on the basis of behaviour to take place prior to the gilt's breeding life and ultimately for selection of whole populations that are less nervous, resulting in higher performance. An alternative take on this would be that it confirms that the behaviour of the stockperson influences the pig's response and various aspects of performance, so that greater effort should be put into training and education in this area to improve productivity.

Reference: Lensink, BJ, Leruste, H, Le Roux, T, and Bizeray-Filoche,D. animal , Volume 3, Issue 01, January 2009, pp 128-134 doi:10.1017/S1751731108003261

Yeast culture could replace growth promoters in nursery diets

The EU banned the use of growth promoters in livestock from the beginning of 2006 and the practice of using low level antibiotics and other additives to enhance growth is coming under increasing pressure in North America. At the same time, the market for "additive – free" and "natural" meat is increasing. The problem is that there are not many proven alternatives that are effective – or certainly cost effective – in improving growth and health, especially in the crucial post weaning period. A number of studies have shown that yeast culture or various parts of the yeast cell may be a useful addition to diets for young pigs.

In a recent study in China, a total of 216 weaning pigs were used in two experiments to determine the effects of dietary supplementation of yeast culture (YC) at different dose levels on the growth performance, nutrient digestibility, intestinal structure and microflora and the immune response in weaned pigs in order to determine whether YC can be a candidate to replace antibiotic growth promoters (AGP). In the first experiment, 192 pigs

weaned at 28 days of age were randomly allotted to 6 treatments, a control without AGP or YC, AGP (Chlortetracycline, 80 mg/kg) and levels of 2.5, 5, 10 and 20 kg/tonne of YC. Pigs were fed the experimental diets for 21 days. Average daily gain of pigs fed 5 g/kg YC was significantly greater than that of pigs in the control and other YC groups. However, there was no difference between YC and AGP group. Pigs supplemented with 5 g/kg YC, 10 g/kg YC and AGP had a significantly higher feed intake than the control; however, feed efficiency was not affected by treatment. Thus, 5 g/kg of YC supplementation level was chosen for a second experiment, carried out to investigate the mode of action of YC. Twenty-four nursery pigs were allotted to 3 treatments for a 21-day trial. Treatments consisted of: 1) control (without AGP or YC); 2) AGP; and 3) 5 g/kg YC.

Blood samples were collected weekly to measure factors associated with immune response and then all pigs were harvested to determine treatment effects on gut microbiology, structure and immune function. Dietary supplementation of 5 g/kg YC significantly improved daily gain of pigs compared to the control group, but performance of pigs fed YC was similar to those fed AGP. Pigs receiving 5 g/kg YC had higher digestibility of both protein and energy in the feed and the gut structure (jejunal villous height and villous height:crypt depth ratio) was better

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when compared to pigs fed the control diet. However, no differences in performance, digestibility or gut morphology were observed between pigs fed YC and AGP.

WHJ comment: The results indicate that dietary supplementation with yeast culture at 5 kg/tonne had a positive effect on growth performance of nursery pigs by improving the height of the nutrient-absorbing villi in the small intestine and by modulating gut immune response. The comparable effect of 5 g/kg YC supplementation and AGP on the growth performance of nursery pigs indicates that YC may be a good candidate as an alternative to antibiotic growth promoters.

Reference: Y. B. Shen, X. S. Piao, S. W. Kim, L. Wang, P. Liu, I. Yoon and Y. G. Zhen, 2008. Effects of yeast culture supplementation on growth performance, intestinal health, and immune response of nursery pigs. J. Anim Sci. 1910. doi:10.2527/jas.2008-1512

Effects of processing piglets on day 1 versus day 3

Newborn piglets are often subject to potentially painful processing procedures such as tail docking and ear notching during the first few days after birth. However, these procedures may influence the development of suckling behaviour and passive transfer of immunoglobulins, especially if done within the first day after farrowing. An experiment carried out in Ontario compared the effects of processing piglets during the first 24 hours versus at 3 days of age on suckling and pain related behaviour, the passive transfer of immunoglobulins and piglet growth.

Six piglets per litter from 20 litters (were weighed at birth and assigned to one of 3 treatments (balanced by birth weight): control (C; unmanipulated), sham processed (S; manually manipulated) and processed (P; tail docked and ear notched) at 1 or 3 days of age). Vocalizations were recorded during the procedures, and piglets were observed after the procedures for pain-related behaviour. Suckling behaviour was observed for 6 hours on each of days 1 to 4. Colostrum samples were collected after the birth of all piglets (prior to first suckle) and blood samples were collected on day 5 to examine levels of immunoglobulins (IgA and IgG) and insulin-like growth factor-I (IGF-I). Body weights were measured at birth and on day 5 and 14. During the procedures, P piglets, regardless of age, vocalized at a significantly higher frequency and produced more high frequency calls than S piglets. All piglets on day 1 produced more high frequency calls than all piglets on day 3. Immediately after the procedures, S and P piglets spent significantly less time lying and more time standing than C piglets, whereas P piglets jammed their tail between their legs more than S or C piglets. Lying, standing and tail posture were not influenced by age, nor were there age by treatment interactions. Piglets on day 1 trembled more than piglets on day 3 and this tended to be exacerbated by processing. There was no effect of treatment or age of treatment on suckling behaviour. P piglets had lower IgG serum concentrations than S and C piglets, although there was no interaction between treatment and age of treatment. The authors concluded that while tail docking and ear notching do appear to result in short term pain and modulated immune status, processing on day 1 appears neither better nor worse than processing on day 3.

WHJ comment: Depending on how many processing procedures are carried out, producers may find it more convenient to carry them out within 24 hours of birth. This experiment suggests that will not have any more adverse welfare effects on the piglets than leaving processing until 3 days. However, what is not clear is the effect that early processing could have on piglet survival, especially for smaller piglets. Also, in this trial, only two processing procedures were carried out and producers commonly clip teeth and may give an antibiotic treatment soon after birth.

Reference: Torrey, S, Devillers, N, Lessard, M, Farmer, C and Widowski, T. Effect of age on piglets' behavioral and physiological responses to tail docking and ear notching. J. Anim Sci. 2009. 87:1778-1786. doi:10.2527/jas.2008-1354

Flu puts an end to summer profits

Just as the long anticipated price rally was expected to start, the outbreak of H1N1 influenza put an end to producers' hopes of reaching profitability over the summer. Blown out of all proportion by the media and misnamed 'swine flu', the disease proved no more virulent to humans than any other flu. But for pork producers around the world, reduced pork demand and lower prices have spelled disaster after nearly three years of economic challenges.

In the US, a report by the Congressional Research Service said that misnaming the H1N1 influenza outbreak could cost the US pork industry up to $400 million over the summer due to lower market prices.

"Reduced demand for pork could have adverse ripple effects throughout the hog sector, resulting in production changes as producers respond to lower prices," the report states. "Hog producers may reduce planned farrowing due to lower prices. In addition, demand for weaned feeder pigs may decline."

In May, Mexico's agriculture department confirmed that the H1N1 influenza did not originate from hogs at a Smithfield Foods operation which had been suspected by some. The pigs also tested negative for other viruses. "Speculation on the A-H1N1 flu's connections to the Mexican farm specifically and to hog farms generally would be irresponsible and would only bring further injury and pain to pork producers for something that was not of their making," said Neil Dierks, chief executive officer of the National Pork Producers Council.

"Before the flu outbreak, pork producers were losing money, but things were looking up because we were

Agriculture Minister Gerry Ritz serving up pork sandwiches

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heading into the grilling season. When this flu was misnamed, things went south, and producers' losses nearly doubled," said Dierks.

Canadian producers have suffered more than those in the US and for many the situation has become desperate. At the end of May, the Canadian Pork Council appealed to Ottawa for special assistance to help Canada's pork producers deal with the special circumstances. Representatives of the Canadian Pork Council appeared before the House of Commons Standing Committee on Agriculture and Agri-Food as it studied the competitiveness of Canadian agriculture.

New Brunswick pork producer and national chair of the CPC's Business Risk Management Committee Stephen Moffett says Canadian pork producers are competitive but low hog prices, high feed costs, the rise in the value of the Canadian dollar, reduced trade due to US Country of Origin Labelling and now the fallout from the H1N1 flu virus have wiped out much of their equity.

Producers around the country organized pork barbeques to emphasize that pork is safe to eat and to highlight their plight. The Canadian Pork Council enlisted the help of Federal Agriculture Minister Gerry Ritz, who served up pork sandwiches while hosting a luncheon with CPC on Wednesday on May 6, on Parliament Hill in Ottawa.

Census shows industry decline continuing

The April 1st census data shows that year-on-year pig numbers continue to fall, with a reduction of 8.6% in the total number of pigs and 6.2% in breeding pig numbers across Canada. Breeding pig numbers have declined from a peak of 1.628 million on April 1st 2005 to 1.383 million in April 2009, a reduction of 15%. Over the same four-year period breeding pig numbers fell by just under 10% in Manitoba, by more than 25% in Saskatchewan and by 18.5% in Alberta.

Quebec showed only a marginal reduction in pig numbers over the year to April 1st, with a 1.8% drop in total pigs and 1.7% in breeding pigs, while its neighbour Ontario had figures of -11.3% and -5.4% respectively. In the west, Saskatchewan was the hardest hit, with a reduction of 24.2% in total pig numbers and 20.6% in the breeding pig category. Manitoba had 6.9% fewer total pigs, while Alberta numbers fell by 9.4%.

At April 1, Canada had 8,300 hog operations; about 1,000 fewer farms than one year ago as several hundred producers took advantage of the federal government's Cull Breeding Swine Program to dispose of their breeding herd, says Statistics Canada. Between April 1st 2005 and the April 2009 census, numbers of farms reporting data, fell by 49% in Manitoba, by 61% in Saskatchewan and 44% in Alberta.

The impact of COOL was clearly seen in the April data. Hog producers exported an estimated 1.7 million hogs in the first 3 months of 2009, down a massive 42.8% from the peak reached in the first quarter of 2008.

Record hog profits in Quebec

Members of Quebec's hog industry were surprised to learn their jointly owned slaughter operation Olymel netted some of

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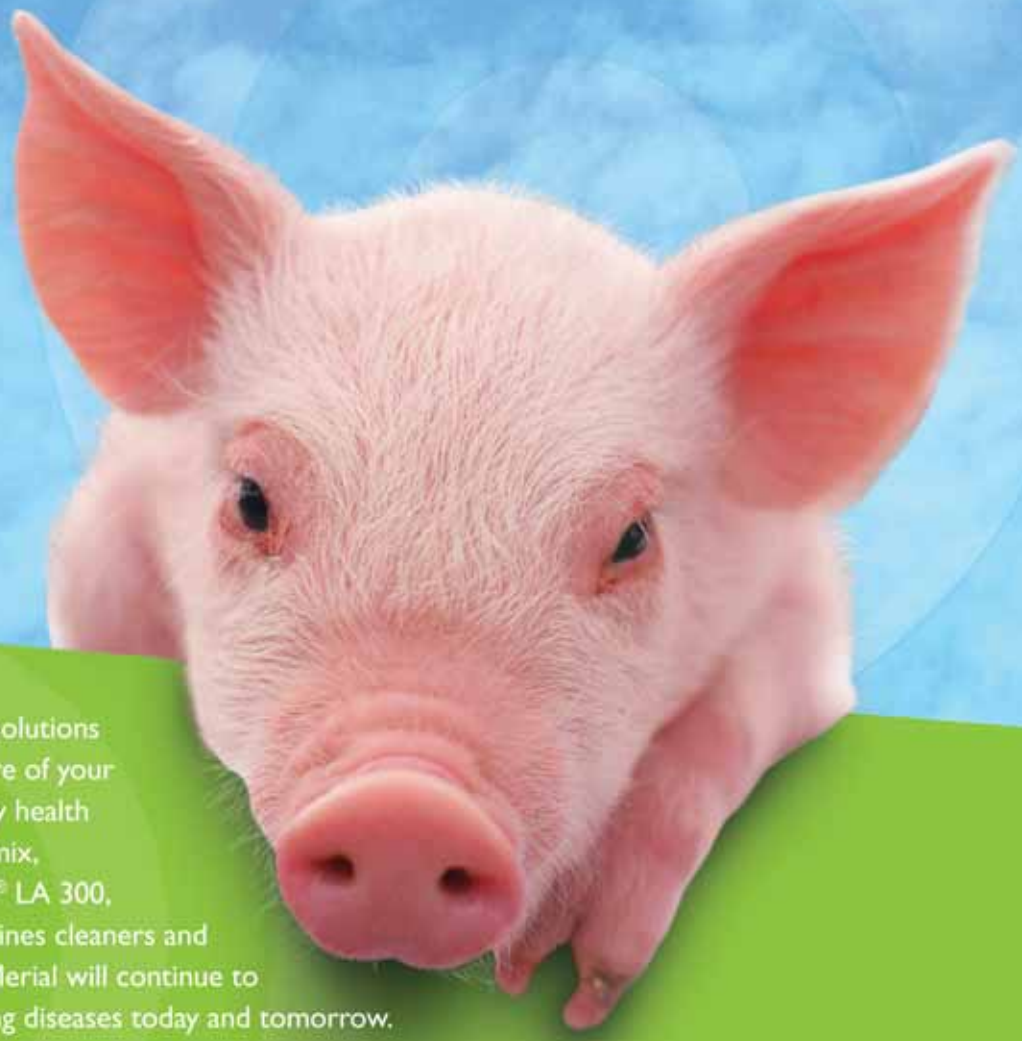

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the largest profits for the province's co-operative union, writes Mark Cardwell in Farm Credit Canada's AgriSuccess Express.

Coop Fédérée posted record profits for 2008, ringing in at $71 million. The coalition of 91 agricultural co-operatives employs 11,000 people in Quebec, Ontario and Alberta and generates $3.6 billion in annual sales.

"It was a shocker when you consider all the troubles Olymel has been having with slaughtering the past few years," said Jean-Guy Vincent, president of the provincial hog producers association. "But if they're making money, that means they can pay us."

Quebec hog producers own 65 per cent of Olymel shares.

The company's performance last year was a stark contrast to the previous five, when the company lost $150 million, said Olymel spokesperson Richard Vigneault. Most of those losses, he adds, were related to the fresh pork sector.

"We still face some serious challenges, but last year's results are a relief," Vigneault says. He credits both a jump in international exports, particularly to emerging markets like Russia and China, and the painful cuts Olymel made to its slaughtering and transformation facilities in Quebec between 2005 and 2007 as contributing to the profit.

For his part, Vincent says many of Quebec's 4,000 hog producers are fighting to keep their heads above water after three consecutive years of low market prices, rising production costs and record government-backed insurance indemnities - $550 million in 2008, up from $375 million in 2007 and $250 million in 2006.

Those payouts have led to public calls for major reforms of Quebec's pork industry and the provincial government is currently studying the issue.

Lower Danish pork production anticipated

Following an 8 per cent increase over the last four years, Danish pigmeat production is expected to decline marginally to 26.7 million head according to the Danish Meat Association (DMA). However, a further 13 per cent rise in exports of piglets to six million head will reduce meat plant supplies by one million pigs (4%) to 19.7 million head.

Piglet exports have increased almost three fold since 2004 reflecting the increased land requirement for slurry disposal, which has increased production costs in Denmark. Germany is the principal export market for Danish piglets.

According to DMA, EU pig supplies are expected to fall by more than two per cent to 250.7 million head in 2009. The greatest decline is expected in the first quarter of 2009, with supplies down by more than 3 per cent to 63 million head compared to the corresponding quarter in 2008. Supplies in the second and fourth quarters are both expected to fall by 2 per cent with the rate of decline in the third quarter expected to be slightly less. The largest fall is anticipated in Eastern Europe.

The latest figures published by the Polish Statistical Office highlight the decline in pig production anticipated for 2009. In November 2008, total Polish pig numbers were 19 per cent lower with sow numbers decreased by almost 20 per cent.

Reduced production combined with anticipated stable consumption levels and a competitive global pigmeat market are expected to lead to EU pigmeat exports easing by almost 20 per cent in 2009 to 2.05 million tonnes, says DMA.

British producers on a roll

Despite having seen their industry contract by 45% over the last 10 years, British producers are now on somewhat of a roll, with a pig price of around £1.50/kg or $2.70 giving renewed confidence and, in some quarters, talk of expansion. Not only that, but neither the H1N1 flu scare nor the recession - which has hit the UK hard - seem to have dented the consumers' appetite for pork so far. Media focus has been on the political fallout caused by a scandal over MP's expense claims, which effectively relegated the flu story to the inside pages of the newspapers. And, after countless food scares over the last 20 years, the British public takes such matters with a healthy dose of cynicism.

As the pork industry plunged into crisis during 2007-8, the British strategy was to appeal for support from domestic consumers, launching a highly successful "Pigs Are Worth It" campaign, which included a wide range of initiatives to increase loyalty to British products. One of the most high profile was the release of the song "Stand by your Ham", performed by people from the industry, which resulted in huge publicity all around the world. BPEX also engaged the support of celebrity chefs, including Jamie Oliver, who produced a one-hour TV show called "Jamie Saves Our Bacon" which extolled the virtues of British pork. There is no doubt that the profile achieved by the industry in 2008 was a major contributor to maintaining demand and achieving good pig prices, even if high feed prices wiped out any profit for producers.

Some of the recent good fortune is due to the reversal in the British Pound's value relative to the Euro, which has made imports more expensive. But the optimism in the industry at the moment is mainly down to the industry and its representative bodies having worked so hard for a long time, having strong leadership and being incredibly creative in their promotion of the industry and its products.

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Carcass demerits – the overlooked cost

Demerits in slaughter hogs represent one of the most confusing and poorly understood opportunity costs in hog production, believes Tony Nikkel of Puratone Corporation. In addition to this, demerits rarely hit the "spotlight" in pig production as they are often overshadowed by other production parameters such as average daily gain, feed conversion, percent weight variation, percent hogs shipped in core and percent mortality. However, he says, slaughterhouse demerits can represent a significant cost to both the producer and the packer and efforts to reduce demerits can be very beneficial to both parties.

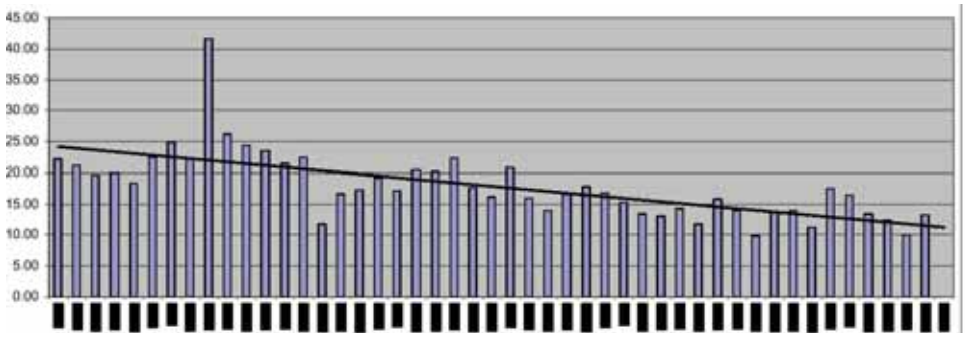
Demerits can be considered as any flaw in the pig that is picked up at the packer at any period from the time of unloading to the time of final meat processing. The vast majority of demerits are discovered during the unloading and holding of hogs for slaughter and during the period of carcass splitting and visceral examination. Demerits include the entire condemnation of the hog right down to the small trimming of meat.

Financially, demerits add cost at different levels:

1. **Cost of trim** - the trimmed parts of the carcass are scaled and multiplied by that week's market price and deducted from the value of the hog.
2. **Cost of changing weight class** - carcass weight classes are determined after the carcass is trimmed. Therefore the value of market hogs per kg shipped "in core" can be reduced if the weight of the trim reduces carcass weight to a lower weight category.
3. **Health and Quality Premiums** - some packer programs reward producers a bonus based on the percent demerit free hogs shipped per month.

Most demerits have financial penalties but some do not. Some are very important to the packer but less important financially to the producer. For example "pleuritis," or lesions of the inner lining of the rib cage, requires packer employees to pull a carcass off the processing line onto the "held rail" and trim small amounts of tissue off the inside of the rib. The "held rail" has a limited capacity of carcasses, so when additional hogs require trimming and the "held rail" is full, the entire processing line stops until space is free on the rail. This is an expensive delay. However from the producer's aspect, the pleura is of very little weight on its own and therefore will only contribute to the overall percent demerited animals on the Health and Quality Premium.

Figure 1: Incidence of demerits and condemns



Information on demerits in slaughtered hogs is received from the packer twice a week via an emailed excel spreadsheet. The information can be sorted according to producer tattoo number, type of demerit and time period. In attempts to grow the most sought after hogs, Puratone regularly meets with packers to discuss ways in which the company can improve its product. Puratone was challenged in 2005 to reduce the number of demerited hogs delivered to the packer, particularly the number of pigs with pleuritis, but also the number of hogs with abscesses and condemned heads and/or necks.

Puratone launched a much more extensive project than investigating these three demerits alone, which included examining which demerits were the most financially significant from Puratone's perspective. The results showed that approximately 10-20% of all hogs delivered had some form of a demerit valued at $0.60-$1.20/hog. Of the hogs delivered with demerits, 80% of the lost opportunity cost arose from market hogs that were being completely condemned. When examined further, it was discovered that 80% of those hogs were being condemned due to transport related issues such as being dead on arrival, identified as "subject" pigs on arrival and later euthanized or they were "dead in the pen" at the packer prior to slaughter. Since handling and transport was heavily incriminated, a separate team was created to investigate this issue focusing on: on-farm facilities (holding pens, alleyways and chute design etc), on-farm and on-truck prod use, trailer stocking density, ambient temperature at loading and scaling, farm to farm differences, in-transit delay times and unloading delays at the packer. These areas were all assessed using Elanco's "Load-side assessment" tool and progress monitored through packer demerit information.

Since condemned hogs are such a large percentage of the lost opportunity cost to the system, Puratone has set up a reward program to encourage farms to reduce their incidence of condemned hogs. Feeder farms are ranked according to their percentage of condemns shipped and the top three farms with the lowest percentage of condemned hogs shipped are rewarded quarterly.

Regarding the three major demerit concerns outlined by the packer, trips to the slaughter plant were made to assess any contributing health issues apparent in the hogs that had any of the three big demerit types. These slaughterhouse investigations in combination with comparative on-farm health status information led us to believe that the primary cause of the pleuritis adhesions was PRRS virus related pneumonia in late nursery and early finishing. Completing a PRRS eradication program and analyzing the pleuritis incidence changes confirmed this suspicion and resulted in approximately $1/hog savings due to reduced demerits (this was prior to pleuritis being included on any health and quality premiums).

The majority of the abscesses being found at slaughter were associated with tail biting and the majority of condemned head and necks were being attributed to abscessed lymph nodes in the jowls of the pig's head. Work on the latter is not complete, however it appears to be somewhat associated with general health status in the herd, in other words, the worse the health status, the more condemned head and necks.

Ongoing tracking and monitoring of demerits in slaughter hogs also has other uses including comparing different vaccine and medication strategies, comparing the impact of various diseases on demerits, giving a better estimate to financial costs associated with various diseases (more than just mortality, ADG and F/C), comparing changes in management strategies such as prod use, large pen vs small pen, and assessing transportation crews, companies and drivers.

In conclusion, information regarding demerited hogs is available from Canadian packers in an electronic friendly version. There is a large amount of information included, some of which is technical. It is recommended that a person familiar with Excel graph and chart this information so it can be utilized. It is also recommended that the farms' herd veterinarian be used to best determine the cause(s) of slaughter-house demerits and recommend intervention strategies as there are many potential causes of single types of demerits as well as many single diseases that can cause multiple different types of demerits.

≡WHJ≡

Antibiotics a great tool for disease management if used properly

By Myron Love

Antibiotics are a great tool in the management of bacterial disease in swine herds, notes Dr. Mike Sheridan but improper use - or overuse - can result in bacteria becoming resistant to specific antibiotics.

"It is most important to always follow the full treatment to make sure that all but the most resistant bacteria are killed," Sheridan, a Manitoba veterinarian and partner in Sheridan Heuser Provis Swine Health Services, told hog producers attending the 2009 Manitoba Swine Seminar held in January. "The body will usually deal with the rest."

Antibiotics (as differentiated from vaccines, anti-inflammatories, pain killers and de-wormers) target bacteria such as E. coli and Strep, Sheridan explained. Some antibiotics such as penicillin kill bacteria while others, like tetracycline, slow bacterial growth allowing the body's natural defences to do the rest.

In hog production, antibiotics are used for treating or preventing illness and improving growth and feed conversion, Sheridan said. He emphasized the importance of closely following label instructions. The label will indicate dosage, frequency of administration, species the substance is licensed for, method of administration, withdrawal time, expiry date and storage recommendations. Using an antibiotic for a purpose or in a manner other than that listed on the label can only be done with the written approval of a licensed veterinarian, Sheridan said. This "off-label" use may be administering a drug not registered for use in pigs, a different method of administering the antibiotic or in a different age group or stage of development.

Sheridan noted that antibiotics are organic products which can be damaged by exposure to too much heat or cold or light. Antibiotics that are designed for room temperature, for example, should not be stored in a fridge. "Once opened, antibiotic bottles should be used as quickly as possible to prevent contamination of the substance by resistant bacteria," Sheridan said. "Needles that are used in multi-dose bottles must be clean – and preferably new - before puncturing the rubber stopper. And the stopper should be disinfected with alcohol or something similar before further needles are injected."

He noted that there are different drug classifications. Schedule F, Part 1 drugs are sold by prescription only. Schedule F, Part 2 are non-prescription drugs and can be sold at lay-out lots, but users should still follow the label instructions.

"Rarely does doubling the dose translate into double withdrawal time," Sheridan said. "It is very important to use the right product and the right application. And be sure to inject obviously sick pigs in the early stages of a disease. That is one of the most overlooked applications and a costly oversight."

WHJ

Organic hog producers call for more government support

By Myron Love

Haycrest organics is a 100-400-hog operation operated by Robyn Gudmundson and Eric Bjornson near Poplarfield in southern Manitoba. They market their pork right from the farm gate and regularly sell out. They say that people love the quality of their pork. But Gudmundson, Bjornson and other organic pork producers such as Bruce Daum (Krisandra Farms near Forrest, Manitoba) and Ian Smith of Natural Pork, based near Argyle, Manitoba, all say that they would like to see much more provincial government support for their production and marketing efforts. Daum is calling for alternative market development support and tax breaks for environmentally-friendlier farm operations.

Smith thinks that there should be more organically-certified custom and on-farm slaughter facilities and transitional support for new local organic feed suppliers. The suggestions put forth by Smith, Daum and Haycrest Organics' principals were presented by Janine Gibson to hog producers attending the annual Manitoba Swine Seminar which was held at the Victoria Hotel in Winnipeg on January 28 and 29. Gibson is the president of the Organic Food Council of Manitoba and the Organic Federation of Canada's Manitoba representative. In her presentation, she outlined the basics of organic hog production.

A growing number of Canadians - as many as 40% - buy organic products while 64% of Canadian surveyed believe that organic food is better, Gibson told her audience. Canadian consumers are willing to pay more for organically-produced food, she added. Gibson reported that there are currently 25 accredited organic certification agencies. Organic producers require an Organic Farm Plan (which has to be updated annually) based on "precautionary principles" (which means the exclusion of the most toxic chemicals).

"Organic farmers produce food using locally-based, integrated management systems that are monitored annually by independent certification agencies," Gibson said. There are both national and provincial standards, she added. Organic practices, she explained, are intended to restore and sustain ecological stability within the surrounding environment. Where livestock are concerned, they have to be provided with living conditions and space allowances appropriate to their individual needs and fed only organically-prepared feed. The feed, for example, should exclude antibiotics and synthetic nitrogen and genetically-engineered organisms are also forbidden.

"The practices are intended to minimize stress, promote health and prevent disease," Gibson said.

In addition to better care and treatment of livestock, organic producers have to be careful about manure storage and handling. Facilities for manure management have to be designed, constructed and operated to prevent contamination of ground and surface water, Gibson noted.

Gibson suggested that the Government of Manitoba's moratorium on new hog barn construction and expansion in much of southern Manitoba - that was passed into law last spring - would not be needed if hog production was transformed to more diverse, sustainable models.

≡WHJ≡

Russia potential land of opportunity for Canadian hog producers

By Myron Love

For Canadian hog producers and others involved in the industry, Russia is potentially a new land of opportunity - if you can make the right connections.

In the days of Communism, all meat consumed in Russia was produced in Communist countries, noted Jim Long in a presentation to Manitoba hog producers attending the annual Manitoba Swine Seminar January 28 and 29 in Winnipeg. Today, Russia is in the market for meat wherever it is available. Long reported that last year Russia imported the equivalent of 3 million market hogs from North American producers.

"Russian hog prices are currently $3.00 US a kilogram liveweight - or about $300 for a 100kg market hog," he said. "And productivity in Russia is generally quite low; about 13 hogs per sow."

As standards of living increase in Russia, pork consumption is expected to reach European levels of 40kg per capita, Long said. "Russians' percentage of disposable income spent on meat is the highest in the world. Much of the pork in Russia is eaten in sausage form," Long noted. "To produce the amount of pork domestically to match European consumption levels, the country's pork production would have to triple to 50 billion head in inventory."

Long reported that Russian government loans have stimulated a 24% increase in pork production since 2005 but, he added, there is still a tremendous need. Between the early 1990s and 2004, there were virtually no new swine buildings constructed in the country. Swine production had fallen to half of what it was in 1990, before the end of Communism, and much of the production infrastructure was left in ruins. Today, despite massive amounts of capital that have been put into infrastructure in the past five years, up to 60% of Russian pork production is of "backyard" quality.

"Slaughter plants are small," he said. "Many average 200-300 head per day. Almost all larger producers do their own slaughtering and processing. That is because nobody trusts anybody else. There is no such thing as credit."

Jim Long's interest in the Russian hog industry is from a geneticist's point of view. Long is the president and CEO of Manitoba-based Genesus Inc. Founded in 1982, Genesus Inc, is one of the world's largest supplier of genetic technology products for the hog industry.

"Over the past three years, we have been developing a sales and marketing program for the Russian market," he said. "We are now providing technical support to several customers in Russia and we have several more prospects."

Long notes that swine genetics in Russia is about 30 years behind the West. "One hundred kilogram hogs have 45-50 mm back fat, feed conversions of 5 to 1 and days to market of 250. Name the disease and there is a good chance they have it."

All of Genesus' customers in Russia have huge land holdings - ranging from 15,000 to 200,000 hectares, Long said. They are all large agricultural complexes and all the grain they grow is for feeding their pigs.

The bulk of the labour force in Russian swine units, Long noted, is female and that includes the veterinarians. Average wages are about $75 to $100 a week and the work is extremely compartmentalized.

"The official Russian government policy is to double pork production over the next five years," Long said. "That would mean the country would need one million new sows and it would require over $2 billion in investment."

As a major oil and gas supplier though, Russia is being hit hard by the worldwide economic crisis and may not be able to complete that ambitious five year plan. So the opportunity for Canadian hog producers is still there. But Long warns that you have to watch out for the bureaucracy. "It's amazing," he said. "Everything has to be documented."

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Reducing the land requirement for manure disposal

Marla Riekman of Manitoba Agriculture, Food and Rural Initiatives

Moving from N-based to P-based manure application rates can significantly increase the land base required for manure disposal, by a factor of two to six fold, point out Marla Riekman, Petra Loro and Robyn Harte of Manitoba Agriculture, Food and Rural Initiatives. Phosphorus budgeting can be used to determine if an operation has sufficient land available for manure application based on P, or if the farm has a P surplus. Where a surplus exists, there are a number of strategies that can bring the operation into balance, they say. Producers should explore the available management practices to reduce the required land base, starting with the least costly practices first. These include minimizing feed wastage, decreasing feed P content, reducing fertilizer P imports and increasing crop P removal.

Whole farm budgeting

Alternatives to local land application of manure – such as transportation and treatment – can be very costly and should only be considered after less costly management practices have been implemented to minimize land base requirements. Phosphorus budgeting is an effective tool that can be used to identify feeding and cropping improvements that reduce land base requirements.

A whole farm P budget accounts for all of the P that is imported into, retained by and exported from an operation. To complete a whole farm P budget, detailed production information is required. Then, the calculated total amount of P retained on the farm and exported off the farm is subtracted from the total amount of P imported onto the farm. A positive result indicates that more P is imported than retained and exported; therefore, there is a surplus of P on the farm. Ultimately, this surplus will accumulate in the soils receiving manure. A negative result indicates a P deficit for the farm (more P is retained and exported than is imported). The ideal outcome for the long-term is for the farm to be in balance.

What can the producer do if there is a P surplus?

If there is a P surplus on the farm, measures can be taken to bring the farm into balance. Some are relatively straightforward and inexpensive, while others are more complex and very costly. The solutions will depend on the individual circumstances of each operation. The following steps should be considered, in order, until an acceptable balance is achieved.

1. ***Minimize feed wastage*** - Significant amounts of nutrients may end up in the manure simply because they were not consumed. Poor feeder design, improperly adjusted feeders and the form of feed can all contribute to feed wastage.
2. ***Decrease feed P content*** - Any surplus P in the feed ends up in the manure. This not only increases feed costs for the producer but also increases the land base required for manure application. The P content of the feed can be optimized by:
   - Matching P requirements for maintenance and growth – over-feeding P relative to the animals' requirements will increase P excretion.
   - Formulating rations based on available P – using enzymes, such as phytase, to increase available P levels in the feed.
   - Adopting phase feeding where appropriate – phase feeding adjusts rations to the nutrient requirements of the animals in a stepwise fashion as the animals grow. This strategy minimizes the excesses caused by feeding one ration through all growth stages.
3. ***Reduce fertilizer imports*** - Soil testing and realistic crop yield targets should be used to determine manure application rates. Commercial P fertilizer should only be used where crop P requirements cannot be met with manure nutrients.
4. ***Increase crop removal*** - Export of P in crop products (i.e. the harvested portion of the crop that is exported off the field) may be increased by designing a crop rotation that maximizes P removal. Crops with higher P removal rates may be added to the rotation or grown more frequently.
5. ***Expand the land base*** - Accessing new land for manure application will increase crop P export and provide greater flexibility for manure application. A larger land base will allow rotation of fields in order to manage soil nutrient build-up. Crops grown on fields with low P need additional P to reach target yields and are ideal candidates for manure. Crops grown on fields with sufficient to high P will often not respond to additional P. These latter fields may also pose an increased risk to surface water as soil P levels become excessive. More land can be obtained for manure application through purchase, rent, lease or agreements with neighbours.
6. ***Treat the manure to remove P*** - If the land base cannot be expanded within an economical hauling distance to achieve P

balance on the farm, manure treatment may be required to export the surplus P from the farm. However, manure treatment systems often have extremely high capital and operational costs and require a high level of management.

Case farm – managing feed and crop rotations to reduce land base requirement for manure

The case farm used by the authors is a 3,000-sow farrow to wean operation producing 5kg piglets, with a land base of 1,000 acres, growing canola, spring wheat, soybeans and oats. The soil type is heavy clay. For this case farm, under this feeding and cropping strategy, 3,192 acres are required for long-term P management at 1x crop P_2O_5 removal. As the farm has access to only 1,000 acres for manure application, it has a P surplus.

The least costly changes that will reduce the P surplus and land base requirements should be considered first. For the case farm, these include decreasing the P content of the feed and increasing crop removal of P. It is assumed that feed wastage is already kept to a minimum by monitoring feeder operation and making adjustments when necessary. It is also assumed that no fertilizer P is imported onto the case farm. If a producer is importing fertilizer P onto the farm, the amount of fertilizer P should be kept to a minimum (i.e. starter P only) and should be added to the sources of P imported.

Decreasing feed P content

The original rations have relatively high P contents, each approximately 0.15% higher than the proposed nutrient guarantee minimums - 0.55%, 0.6% and 0.6% for dry, breeder and lactation sows, respectively (Canadian Food Inspection Agency, 2007). Therefore, there may be opportunities to decrease the % total P in each ration and reduce the amount of P excreted in the manure. Phytase can also be added to the rations to increase P availability so that the total P content of the feed can be minimized.

The rations for the farm were reformulated to meet the sow's nutritional requirements; in particular, while total P was reduced, the calcium to available P ratio was formulated within industry standards. Lowering the % total P in the rations decreases the total P_2O_5 excreted in the manure (Table 1) and consequently the P_2O_5 output per head, from 15.57kg per sow to 12.87kg (- 17.3%).

By adjusting the feeding strategy alone, the total amount of P excreted in the manure was reduced from 102,776 lb P_2O_5 to 84,960 lb P_2O_5. This resulted in a decrease in the required land base from 3,192 acres to 2,639 acres which is 553 acres less than that required under the higher P feeding strategy.

In addition to reducing the land base requirement, the improved feeding strategy also reduced feed costs. For the case farm, the original feed cost per year was $693,066. The adjusted rations, achieved through lowering the total Dical and adding 300g phytase per kg of feed, had a slightly lower total cost per tonne that resulted in a savings of approximately $11,167 per year for the producer.

Increasing crop removal

Further reduction in the land base requirement may be achieved by adjusting the crop rotation to increase crop P_2O_5 export. With the exception of canola, the crops currently grown by the case farm (spring wheat, soybeans and oats) have relatively low P removal values, all below 30 lb P_2O_5/acre (Table 7). To maximize the export of P from the operation, the producer should consider adjusting, where possible, the crop rotation or accessing lands that grow crops with higher P_2O_5 removal, such as alfalfa, barley silage, grain corn, silage corn etc.

Table 1: Nutrient excretion model: nutrient budget – Phosphorus (P) contained in manure from the original and adjusted feed rations.

	Original rations			Adjusted rations		
Phosphorus budget	P (kg)	P_2O_5 (kg)	P_2O_5 (lb)	P (kg)	P_2O_5 (kg)	P_2O_5 (lb)
Total P imported in the feed	22,906	52,429	115,344	19,368	44,331	97,528
Total P retained in the sows	433	991	2,180	433	991	2,180
Total P exported in the weanlings (< 5.6 kg)	2,063	4,722	10,388	2,063	4,722	10,388
Total P excreted in manure	20,410	46,716	102,776	16,872	38,618	84,960

For example, by changing the crop rotation to canola – winter wheat – soybeans – corn, the annual crop P_2O_5 removal rate increases from 32.2 lb P_2O_5/acre to 43.7 lb P_2O_5/acre. Adopting this crop rotation following the feed adjustments, decreases the land base requirement by an additional 695 acres.

Therefore, the combined improvements to the feeding strategy and crop rotation result in a required land base of 1,944 acres which is 1,248 acres less than that required by the original case farm.

This is a very significant decrease to the land base required for the long-term sustainable management of manure P. However, as this operation only has 1,000 acres available for manure, an additional 944 acres are still required to bring the operation into P balance over the long-term.

Conclusions

Switching from N-based to P-based manure application rates can significantly increase the land base required. The use of phosphorus budgeting can determine whether sufficient land is available for manure application. If not, there are various strategies that can be employed to reduce the required land base, including minimizing feed wastage, decreasing feed P content, reducing fertilizer P imports and increasing crop P removal. ≡WHJ≡

Optimizing herd parity structure

Part one: The importance of correct parity structure

By Bernie Peet

Introduction

Herd parity structure, or parity profile, is defined as the percentage of sows in each parity group. It is determined by:

- The overall level of culling and deaths in the herd
- The parity at which gilts and sows are removed from the herd due to culling or death
- The numbers and timing of gilt introductions
- Management policy on culling for age and performance

Achieving the correct parity structure within a breeding herd is important for a number of reasons related to performance, herd immunity and health, cost of replacement stock and consistency of production. A herd with a young age structure, due to high culling and death losses, will have lower fertility and litter performance than a herd where sows are retained to the higher parities. Where parity structure is unstable because of variable gilt introductions, the number of pigs weaned each week is much more likely to be inconsistent. Also, a large introduction of gilts at one time will affect herd immunity levels and may lead to a flare-up of diseases such as PRRS, whereas a stable herd structure with a regular gilt introduction helps to avoid such problems. The ideal parity profile is achieved by having a regular and consistent introduction of gilts to replace sows that are culled or which die. Minimizing losses due to enforced culling and deaths will also ensure that more sows reach the later, more productive, parities.

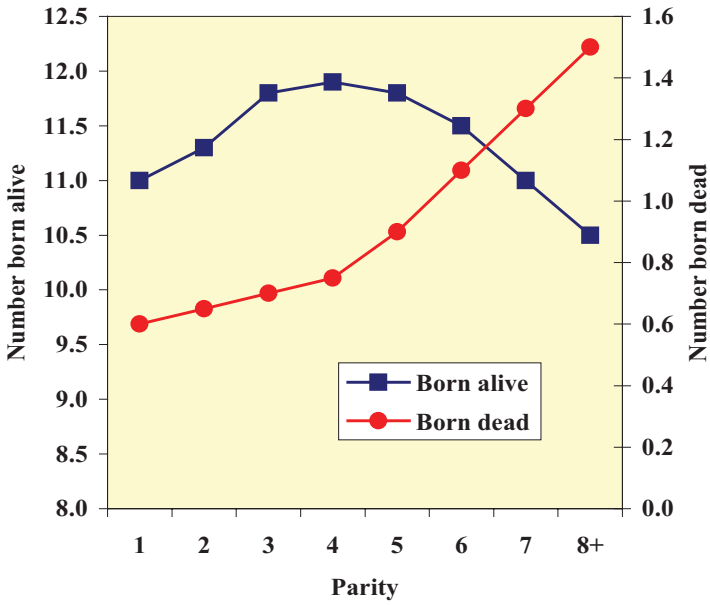
Parity and sow performance

Many aspects of productivity are influenced by parity, so it is important to understand these relationships in order to determine the optimum parity profile:

- Livebirths per litter increase from parities 1-3, peak in parities 3-6 and usually decline after parity 6 (Table 1)
- Stillbirths per litter increase with parity, rising rapidly after parity 5-6 (Table 1)
- Piglet birthweight is fairly stable up to parity 5, after which time it declines and becomes more variable
- Rearing ability peaks in parities 2-4 and declines thereafter
- Sow mortality is highest in younger females
- Reproductive failure and non-productive days are highest in younger females
- Farrowing rate peaks in parities 2-6, then declines

It is clear from these relationships that, typically, reproductive performance is highest in parities 3-6 inclusive and tends to decline as sows get older. The point at which productivity falls off will vary from farm to farm due to genetic, management and environmental factors. It may be as low as fifth parity or as high as parity 8. Information from the farm's herd recording system can be used to determine the appropriate parity at which culling for age alone should be carried out. Because the highest productivity occurs in sows of parity 3-6, the aim should be to maximize the number of sows in these parities. This will only be achieved where the number of culls and deaths up to parity 3 is low and where a strict "cut-off" point for culling on old age is enforced. Unfortunately, many herds in North America show high levels of culling and deaths in young females making it impossible to realize these objectives.

Table 1: The effect of parity on numbers born alive and dead



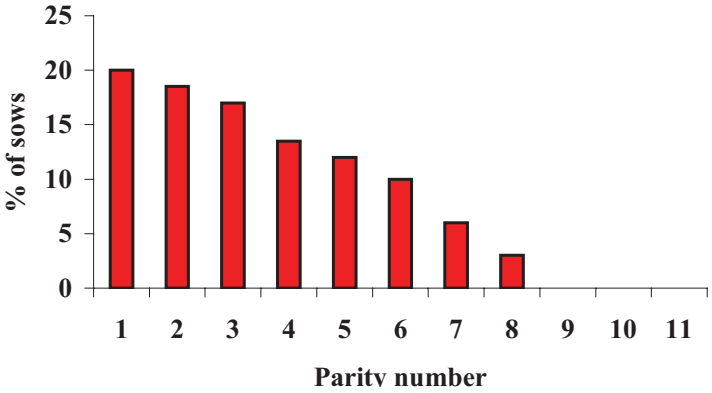
The ideal parity profile

The following histograms show the percentage of sows in each parity within the herd and illustrate graphically the herd age structure or parity profile. Such graphs help us to understand a number of aspects of management within the herd.

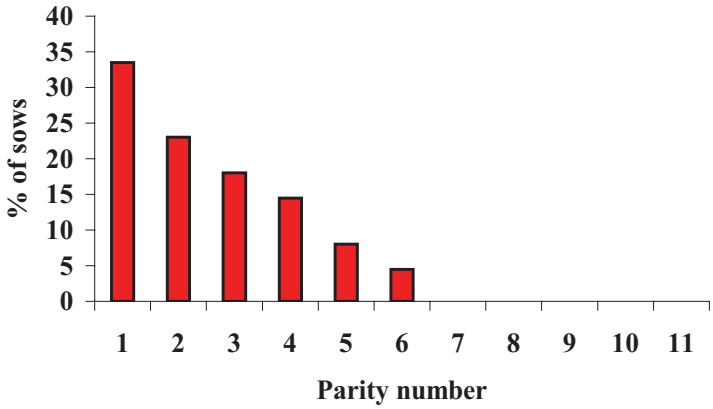
Herd 1: This profile is from a highly productive herd that manages to retain a large number of young females in the herd to parity 3 and beyond. It has about 55% of sows in parities 3-6 and a small percentage of sows in parities 7 and 8 indicating that some sows remain productive into the higher parities. Most importantly, the parity distribution and the shape of the histogram indicate a regular pattern of gilt introduction. This profile may be said to be ideal.

Herd 2: This herd shows a similar pattern to Herd 1 but the histogram is much steeper. Although it brings in a steady supply of gilts, the level of culls and deaths in young females is too high and only 45% of sows are in parities 3-6. The fact that there are

Herd 1



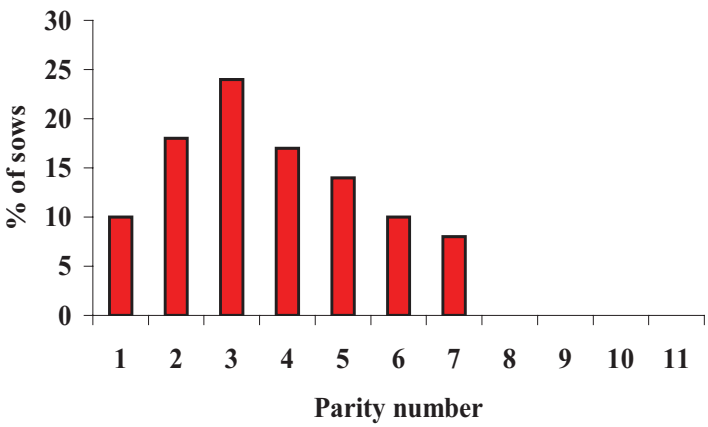
Herd 2



no sows in parities 7+ suggests either culling due to poor performance in later parities or that no sows physically make it to that point. This herd is typical of many in North America which have a regular gilt replacement program but a high drop out rate that is often the result of deficiencies in housing, feeding and management.

Herd 3: This herd has a very high percentage of sows (63%) in the 3-6 parity range and so will be very productive in the short term. However, over the last 12 months, gilt replacement rate has been lower than is required to maintain a stable profile as in Herds 1 and 2. When the sows currently in parities 3-6 move into later parities and are culled, a large influx of gilts will be required to maintain herd size. Such a profile may result where a newly established herd does not initiate a regular gilt replacement program from the start and has not culled out the sows in lower parities to develop the correct parity structure.

Herd 3



The parity profiles shown above demonstrate how a stable herd structure (Herds 1 and 2) is indicated by a steady downwards slope, the steepness of the slope being determined by the drop-out rate from parity to parity. Over time, the shape of the histogram will be constant. Unstable profiles such as Herd 3 arise where gilt intake is variable and usually result in changes in performance and output as the profile changes over time. It is possible to achieve 55% of sows in parities 3-6, although 45-50% is more typical in well-managed productive herds.

In the second part of this article, I'll look at how replacement rate is determined, how it affects herd parity profile and which aspects of sow management influence our ability to achieve the correct age structure within the herd.

≡WHJ≡

Achieving a 90% farrowing rate

By Egidijus Mickevicius, Technical Support Manager, Eastern Canada, PIC

In these difficult economic conditions every area of production needs to be looked at very closely to bring your operation to a competitive operational position. There are a few key areas to look at closer as some of them have an impact on non productive days which are costly. One of these key performance indicators is farrowing rate. Numerous factors affect farrowing rate and some of them are:

1. Herd health
2. Well trained, knowledgeable and motivated workers
3. High fertility boars, semen quality and semen management
4. Gilt development
5. Estrus detection and insemination timing
6. Early gestation management
7. Culling policy/Parity structure

The focus of this discussion is not just how to get to 90% farrowing rate but how to master the skills and create a systematic culling policy to maintain it. Achieving 90+ % farrowing rate should not be difficult as long as most of the factors below are addressed correctly. There are some opinions that a gilt is an untried animal therefore it is difficult to predict their future. My view on this is that there is not much wrong with a young gilt; therefore there is no reason not to have great results from them.

From my experience working with producers we have followed a few simple rules. Those rules are taken and implemented from research organizations across North America. Some of the basic principles we use are:

Gilt development and boar exposure

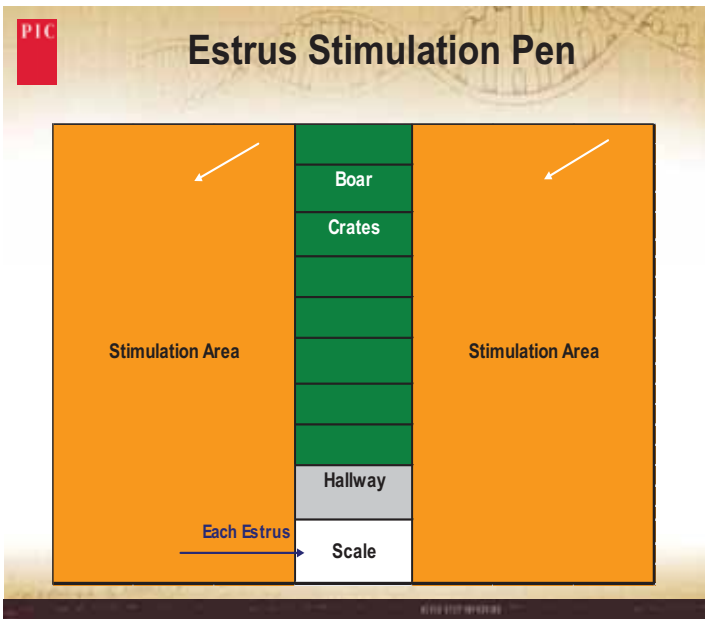
Gilts are a prime necessity of a successful farm as they make up 22-25% of the breeding herd and are the fuel for the future of the herd. Most producers bring gilts into the gilt pool at around 115kg /165 days of age. It is common to hear veterinarians and industry support people recommending gilt introduction at the breeder weaner stage but that depends on the individual farm set up. Soon after delivery, breeding managers should start their farm-specific vaccination program and some start boar exposure at 5 days after delivery.

More and more producers start to record heats (and see benefits of it) and use those to plan mating targets because in these difficult market conditions culling has slowed down. Knowing weekly heat numbers allows managers to make some choices of recommended age and weight targets. Some producers put the boar in the alley for fence line contact starting day 5, some put the boars in the pen for direct contact (Sight, Smell, Sound, Contact) with close supervision and some use the BEAR (Boar Exposure ARea) system. I was fortunate to work with a farm using the BEAR system which has shown some very good results. The area consists of a pen(s) with 4 or more boars located in the middle for easy access for gilts coming in for exposure (Fig. 1).

Age of gilts at first boar exposure affects the distribution of estrus. If the boar is introduced to gilts at an early age of 160 days+ we see a heat spike of around 50% within 10 days after boar introduction and then the rest of the gilts spread over a longer period of time. If gilts are given boar exposure at 180 days+ (without any prior boar exposure) 70% of heats come in by day 10 then tail off. With this it is possible to manipulate gilt introduction into the herd when they are needed most. Other options to manage the timing of estrus are to use PG 600 or Regumate.

What should we do if some gilts don't cycle or we come into a stale period? In some farms I work with managers have been more generous than what Dr. George Foxcroft and his team at

Fig. 1: Boar Exposure ARea



the University of Alberta have suggested in terms of time period from when gilts enter the herd until getting culled for no estrus. Some producers follow the recommended gilt development steps outlined below:

Day 1-13: Direct contact with old mature boars

Day 14: Remix and re-pen all gilts

Day 23: All 'opportunity' gilts without HNS receive PG600

Day 28: All eligible gilts are identified and gilts without HNS are culled

The items below summarize requirements for the gilt development and boar exposure section:

- Basics
  - Feed, water, environment
- Be good to your vet and herd and follow agreed health/integration protocol
- Have handy an old smelly, mature boar (I use a thumb rule of 1:50, others suggest 1:100)
- BEAR system works great!
- If using direct boar contact with a boar in the pen, be careful because boars are powerful animals and should be treated with respect at all times. To maintain the libido of heat-check boars allow them to breed a cull sow. It also helps if boars are put in different areas of the barn (not side by side) and as an unknown boar walks by on the way to the gilt pen, it gets the pheromones going.
- Record keeping
  - Identifying early cycling gilts and planned breeding targets
  - Identification and removal of non-cycling gilts = reduction of non-productive days
- Targets at service are:
  - 136 kg (300 lbs)
  - 30 weeks of age
  - Minimum of 1 recorded heat

Estrus, timing and insemination

So where does this all happen and how?

First we need a solid standing heat. Strong estrus expression is indicated by at least some of the following signs:

- swollen vulva
- possibly showing mucus
- ears up
- biting on the bars
- glazed eyes
- tail up
- restless

In either AI or NS breeding, hygiene in the weaned sow row/breeding pen must be maintained. As well, keeping AI supplies clean is an important part of successful insemination. Keep AI supplies in a container while in the barn to keep them dry, clean and temperature controlled.

The procedure:

1. Semen is deposited into the cervix
2. Contractions of the smooth muscles of the uterus deliver sperm to the utero-tubal junction (UTJ)
3. The sperm lives 12-24 hours in the females and the released eggs live 8-12 hours after ovulation.

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4. The best results are when the sows are inseminated 0-24 hours before ovulation.
5. Ovulation usually occurs in the 2nd half of the heat or in the 3rd third, but we don't know for sure in each individual and that's why we use multiple matings.

Timing options

- 2 x per day heat-checking
- Gilts and repeats – breed immediately on solid standing heat and then every 12 hours
- Regular heats (if early) delay 12 hours and breed every 24 hours
- Heats (if late on day 6) breed immediately and then 12 hours later.

Parity structure

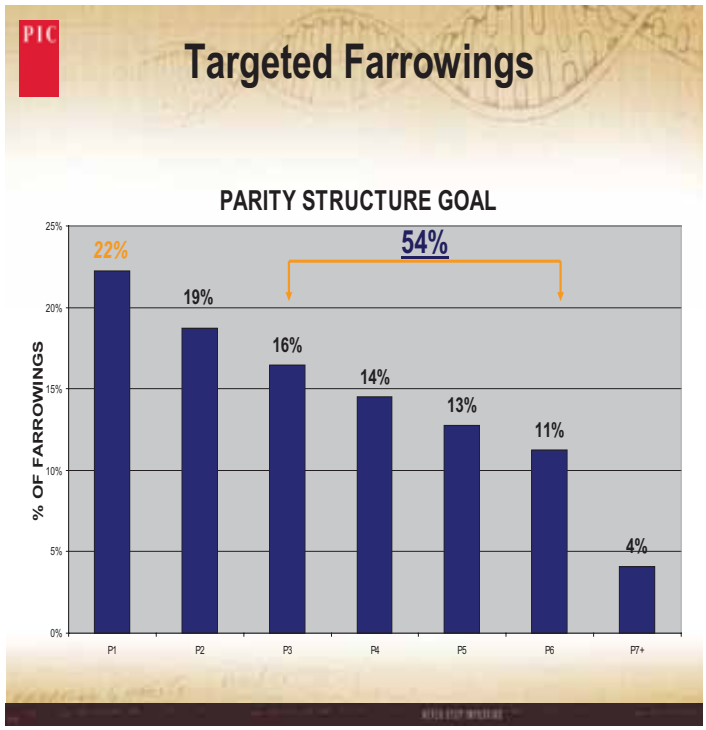
- PIC Parity structure targets are shown in Figure 2.

Culling policy

- Start the culling protocol policy in the young herd and maintain it as the herd ages
- Understand the 20 week window (cycle) by unfolding your weekly farrowings and understanding your weekly parity distribution. By knowing what your weekly farrowed sow parity looks like you can plan culling and replace less productive animals with gilts.
- Selection as sows age (select only best to stay for that one extra parity).

The management principles outlined above have been used very effectively in achieving a 90%+ farrowing rate in some farms I work with.

Figure 2: Parity structure goals



Culling policy

Practical feed budgeting – a producer's take

By Mark Chambers, Production Manager, Sunterra Farms Ltd., Acme, Alberta

Introduction

In these tough economic times, feed budgeting can be very pivotal in your organization in being the difference between having a positive return vs. a negative return. It is times like these when we are generating negative returns that we examine every nook and cranny and don't leave any rock unturned.

In regards to feed budgeting it is critical that you use a good feed consultant or nutritionist to get low cost feed per kg of gain. Ingredient type plays a big role in this but once you have this determined you will then have a feed budget to follow. All feed budgeting means is getting the correct ration to the right weight pig at the correct time so not to be overfeeding a higher cost ration and not underfeeding the correct ration and getting lower than target growth rates.

In this article I will look at the Sunterra Farms system in Alberta on how we manage and achieve target feed budgets in all in-all out and continuous flow farms.

All in-all out finisher

The process starts with your set budget from your consultant or nutritionist. Budgets of each ration are determined by using expected growth rates so they need to be specific to your farm. The switch from ration to ration is at a particular target weight, so knowing your expected growth rate is important. This will normally come from your breeding company consultant and be for the genotype being used.

Table 1: Grow – finish feed budget

Grower - Feed budget targets		
Ration	**Kg/Pig**	**Total Kgs**
FIN1	23 - 36	32
FIN2	36 - 50	34
FIN3	50 - 73	68
FIN4	73 - 95	76
FIN5	95 - 125	104

Once you have your target feed budget (see Table 1), the concept of budgeting is relatively simple. It all starts with knowing the number of pigs being placed in the barn or room. Using 750 pigs placed at 23 kg we take 750 x 32kgs FIN1 = 24,000kgs. We would then continue for all the rations. With this system we know all the budgeted amounts of each ration ahead of time. Feed is then ordered weekly to deliver the correct amounts.

Once this is done the feed usage is monitored so you know when to switch to the next phase. Monitoring is extremely important, as this is the management aspect of delivering what has been pre-determined.

Table 2: Feed monitoring chart

	Barn		
	# Pigs		
	Feed Budget		
	F1		
	F2		
	F3		
	F4		
	F5		
Week #	Ration	Del. Tons	Cum. Tons

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Table 2 shows an example of how you can keep a close eye on feed budgeting. You can set your budget up once you know the number and weight of pigs arriving. Once you have plugged these numbers in feed can be ordered accordingly. As feed is delivered each week you can add this to the delivered column and carry over to the cumulative column. Once you have received the budget amount you switch to the next ration. If you follow these steps you should be able to achieve your target feed budget. Reporting is also important at the closeout to see if there are any dollars gained or left on the table from feed budgeting.

Table 3 is an example of reporting complete nursery closeouts. This will get reported the same week the group closes, as soon as all the data is reconciled and verified. We call this "Key Indicators". It shows biological and economic impacts of the group of pigs. The top of the table is biological performance relative to target and the bottom is the economic performance calculated out to opportunity cost. With respect to feed budgeting it will report the % of budget of the first two rations fed. The third and final ration is not budgeted as it is fed until the pigs leave. Below you can see the economic impact of hitting or missing the budget. In this example it calculates out to a saving because the actual amount of each ration fed was just under budget. With 1.7 tonnes as the target budget for phase 1 and 6.3 tonnes for phase 2, getting within 92% of budget is pretty good. There are also opportunity costs associated with mortality and FCR which rolls out to a total opportunity cost for the group, positive or negative.

Table 3: Nursery closeout report

Performance Results: Nursery Group ID	ABSLNR 6-83	ABSLNR 1-83	ABSLNR 2-83	ABSLNR 3-83
Close-out date	30-Jun-08	7-Jul-08	14-Jul-08	21-Jul-08
# sold + moved out	920	915	912	915
Average days	55	55	55	36
Average weaning weight (kg)	6.2	6.4	6.4	7.3
ADG (kg/day)	**0.438**	**0.433**	**0.440**	**0.422**
Target ADG for days (kg/day)	*0.503*	*0.508*	*0.505*	*0.459*
FCR	1.48	1.63	1.54	1.41
Target FCR for weight out	*1.56*	*1.56*	*1.55*	*1.41*
ADFI (kg/day)	0.64	0.70	0.67	0.59
Target ADFI (kg/day)	*0.78*	*0.79*	*0.78*	*0.65*
Feed cost per head	$15.55	$17.10	$16.76	$11.10
Target feed cost per head	*$16.49*	*$16.62*	*$17.09*	*$11.30*
Feed cost per kg of gain	$0.6407	$0.7180	$0.6979	$0.7216
Target feed cost / kg gain	*$0.6775*	*$0.6949*	*$0.7083*	*$0.7280*
Average exit weight (kg)	30.5	30.3	30.5	22.8
Target exit weight for days (kg)	*34.1*	*34.3*	*33.9*	*24.1*
Mortality	1.08%	1.61%	1.94%	1.82%
Target mortality	*1.50%*	*1.50%*	*1.50%*	*1.50%*
Feed Budget:				
Phase 1 % of budget	94%	96%	96%	93%
Phase 2 % of budget	93%	93%	94%	92%
Opportunity Costs:				
Feed Conversion Ratio				
FCR OC$ - per pig	($0.72)	$0.64	($0.10)	$0.00
FCR OC$ - group total	($660)	$585	($87)	$0
Feed Budget				
OC$ - Feed budget - per pig	($0.22)	($0.16)	($0.24)	($0.20)
OC$ - Feed budget - group total	($204)	($147)	($215)	($182)
Feed Cost / Head				
OC$ - Feed cost per head - per pig	($0.94)	$0.48	($0.33)	($0.20)
OC$ - Feed cost per head - group total	($864)	$438	($302)	($182)
Mortality				
Mortality OC$ - per pig	($0.23)	$0.06	$0.23	$0.17
Mortality OC$ - group total	($211)	$54	$212	$155
Total OC$				
OC$ - per pig	($1.17)	$0.54	($0.10)	($0.03)
OC$ - group total	($1,075)	$492	($90)	($26)

Table 4 is an example of the economic impact of feed budgeting variances from target with an opportunity cost calculated out to the number of pigs sold/year. If you feed under budget it will show a savings, but don't be fooled, you may end up with decreased growth rates and increased days to market. Budgets are set to achieve not to beat! It is important to report this with each closeout so you can monitor how well you are doing, as in example above. Closeout reports are something that need to be shared all the way back to the stock people working at the farm. They are the people monitoring the pigs each day so can react to things in a timely manner.

This report shows the impact of not following the feed budget and feeding too much of the higher cost rations. In the example, not following the budget results in an opportunity cost of $1.19 per pig and if every group was fed like this, feeding 48,000 pigs per year would leave over $57,000 on the table each year. Just imagine if you were a large producer in the US selling 20,000,000 pigs per year!

Continuous flow finisher

Continuous flow finishing systems are tougher to manage for a number of reasons such as health, hygiene, ventilation and feed budgeting. With this system you don't have all the pigs at the same weight entering and exiting together. You will have pigs coming in at 23 kgs and going out at market weight. In the good old days when feed cost was a smaller part of our costs there was less focus put on it, but today with the increased feed cost it is important that we achieve the best we can with our current facilities.

The following is a real life example of saving feed cost in an older existing facility using current feed costs.

Example, original flow

Pigs enter the grower barn at 23kg after a 6-week turn in the nursery and go on to finisher 1 ration. Their stay here is approximately 4 weeks. Pigs then move to one of the finisher wings and get moved to finisher 3 ration. They remain on this ration until market.

Calculations:

23kgs x 28 days @ 0.715gms day = 43kg out. Gain is 20kg @ 2.5 FCR = 50kg feed. 120kg market weight - 43kgs = 77kgs gain @ 3.43 FCR = 264kgs feed.

50kgs x $0.312 (cost/ kg feed) = $15.60
264kgs x $0.261 = $84.50.

Total feed cost/pig = $84.50.

Table 4: Economic impact of variances from feed budget

Correct budget

In Wt	23kg
Exit Wt	120kg
Gain	97kg
FCR	3.2
Feed	314kg
Pigs entered	750
Mortality	3%
Pigs sold	728

Budget Kgs	Feed	Kgs Feed
32	FIN 1	24,000
34	FIN 2	25,500
68	FIN 3	51,000
76	FIN 4	57,000
104	FIN 5	75,864
314		233,364

	Feed Cost	
$ 312.00	FIN 1	$ 7,488
$ 286.00	FIN 2	$ 7,293
$ 261.00	FIN 3	$ 13,311
$ 255.00	FIN 4	$ 14,535
$ 254.00	FIN 5	$ 19,269
		$ 61,896

Cost pig		$ 85.08
Cost per group		$ 61,896.38
Pigs sold year		48000
Opportunity cost		$ -

Incorrect budget

In Wt	23kg
Exit Wt	120kg
Gain	97kg
FCR	3.2
Feed	314kg
Pigs entered	750
Mortality	3%
Pigs sold	728

Budget Kgs	Feed	Kgs Feed
41	FIN 1	30,750
51	FIN 2	38,250
81	FIN 3	60,750
77	FIN 4	57,750
64	FIN 5	45,864
314		233,364

	Feed Cost	
$ 312.00	FIN 1	$ 9,594
$ 286.00	FIN 2	$ 10,940
$ 261.00	FIN 3	$ 15,856
$ 255.00	FIN 4	$ 14,726
$ 254.00	FIN 5	$ 11,649
		$ 62,765

Cost pig		$ 86.27
Cost per group		$ 62,764.88
Pigs sold year		48000
Opportunity cost		$ 57,303.09

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Example, adjusted flow

Pigs enter grower barn at 23kg after a 6-week turn in nursery and go on to finisher 1 ration. Stay here is approximately 4 weeks. Pigs then move to one of the finisher wings for half their stay on finisher 3 ration. A third move is then made so the pigs can be fed finisher 5 ration from another bin. They remain on this ration until market.

Calculations:

23kgs x 28 days @ 0.715gms day = 43kg out. Gain is 20kg @ 2.5 FCR = 50kg feed.
43kgs to 81kgs (_ gain) = 38kgs gain @ 3.06 FCR = 116.2kgs feed.
120kg market weight - 81kgs = 39kgs gain @ 3.789 FCR = 147.8kgs feed.

50kgs x $0.312 (cost/ kg feed) = $15.60
116.2kgs x $0.261 = $30.32
147.8kgs x $0.254 = $37.54

Total feed cost/pig = $83.46

By simply adding a third move (and third feed) to the flows we ended up with a saving of $1.04 per pig. With 13,000 pigs fed it equates to over $13,000 year in the bank!

Conclusion

With the examples set out above there can be substantial savings for your farm. With higher feed costs the savings are even greater. It is important that you have complete buy-in from all the staff members on what you are trying to achieve with feed budgeting and making sure that you have a solid recording and monitoring system. Feed budgeting on all in - all out is fairly straightforward but with continuous flow it takes some creative thinking and maybe an extra bin or move to make it work. You will need to do the cost benefit analysis for your own farm to see what your best options are.

Take Home Messages

- Make sure you know what your feed budget is.
- Be sure to follow it and track it as the feed is ordered and delivered.
- Don't wait 16 weeks to see if you have hit or missed budget.
- Report the closeout or continuous flow data promptly. Feedback is critical!
- Adding opportunity costs really shows the impact of hitting or missing the budget.
- Foster an environment where the staff wants to see the numbers to improve things.

WHJ

Humidity and moisture effects on your barn – are you aware?

By Ron MacDonald, Agviro Inc.

Imagine waking up in the middle of night with a steady drip of water onto your bed. Would you fix it quickly? Would you want to know why it occurred?

Moisture can quickly destroy just about any non-stainless, plastic or concrete component in a swine barn if left unchecked. Roof trusses and other roof components are likely to be attacked by moisture to some degree in all barns. Yet, they are rarely, if ever, inspected.

Moisture can get into the attic by a number of ways; leaks in the roof sheathing and, more likely, via moisture from the barn itself penetrating poor vapour barriers, leaky and poorly sealed ceiling air inlets, and via exhaust air drawn in through the soffit openings.

The consequences are devastating. The entire roof system can fail, collapsing on the animals and workers below. If you think a leak into your bed keeps you up, try a collapsed roof. And to top it off, if an insurance company can prove there was a buildup of moisture in the attic (which is not supposed to be present) then the insurance policy can be voided.

Leaks between the ceiling and inlet allow moisture into the attic

Deterioration of sheathing screw, sheathing and wood (Photo courtesy Yves Choiniere)

Walls also require inspection. Any insulated stud or pole system needs to be reviewed for location where rodents and water can get in and quickly repaired. This should be done monthly with a quick walk around.

All attics and roofs should be inspected each spring and fall to ensure no damage has occurred and that the attic is not building up a moisture load. Owners can conduct a preliminary inspection, but any evidence of moisture that is not easily remedied should quickly be followed up with a call to a professional. Too much is at stake to let it go.

The photos show examples of what can cause moisture problems and the end results.

≡WHJ≡

PQA Plus program gains producer support

The Pork Quality Assurance Plus® (PQA Plus®) program is being rapidly adopted by pork producers in the USA, according to a series of recent news releases and statements by industry organizations and leading production companies. As of April 6, over 26,000 pork producers had received PQA Plus certification, according to the National Pork Board. The number of sites that have received PQA Plus site status is also growing says the producer organization and over 16,600 individuals have been certified in TQA.

The new program replaces the previous Pork Quality Assurance® program, which was launched in 1989 and was aimed purely at improving food safety. Development of the PQA Plus program, which began in 2006, added animal well-being and site assessment components (portions of which were formerly known as SWAP®) to the PQA® program. The PQA Plus program provides producers with information about on-farm Good Production Practices (GPPs) for the promotion of pork safety and pig well-being.

"Thousands of responsible pork producers from around the nation have demonstrated their commitment to the health and well-being of the animals in their care, and to providing a safe and wholesome product to their customers by participating in PQA Plus," said Erik Risa, manager of education programs for the Pork Checkoff. "We are excited that the momentum behind the program continues to build."

"Participating in PQA Plus by getting PQA Plus-certified and by having an assessment of animal well-being practices conducted on their farms is another way pork producers can demonstrate to the industry's customers that they do the right thing on their operations every day," Risa said.

"We anticipate that recent announcements of support of the program by participants in each segment of the pork supply chain will be the drive behind more producer participation."

With the level of pork exports from the USA having risen sharply over the last few years, enthusiasm for the new program is no doubt partly driven by the demands of buyers in other countries, who are increasingly demanding assurance on production methods. Pork producing companies like Smithfield and Cargill need to operate to internationally-accepted standards in order to widen their marketing options, allowing them to be able to sell into the most lucrative markets at any particular time. It is hardly surprising that both these two companies, along with others, have recently made announcements concerning their implementation of PQA Plus.

Murphy-Brown LLC, the livestock production subsidiary of Smithfield Foods Inc., announced that it is on schedule to complete the certification and farm site assessment components of the Pork Quality Assurance Plus (PQA Plus) program for all its company-owned and contract grower-owned swine production farms in the USA before the end of 2009.

"PQA Plus certification is further evidence of Murphy-Brown's industry leading commitment to socially responsible, sustainable pork production and continual improvement," said Don Butler, director of government relations and public affairs for the company and chairman of the Murphy-Brown Animal Welfare Committee.

"As the industry leader, we are proud to report that we are on schedule to complete PQA Plus certification and farm site assessments for all 480 company-owned farms by 30 September 2009. In addition, we will be assisting all of our approximately 1,700 independent farmers who grow animals for the company on a contractual basis to do the same," added Mr. Butler. "We are doing these things because it is the right thing to do and because we care about our people and our animals. Ensuring their well-being is our top priority."

Cargill Pork also announced in October last year that it was instituting a policy whereby it will purchase hogs only from farms that have been certified under the National Pork Producers Council's Pork Quality Assurance Plus (PQA+) program. By December 2008 Cargill Pork's live production business had completed PQA + certification site assessments for all of the 450 farms where it has production contracts.

In April this year, the company said that it had achieved eight priority animal welfare assurance objectives. Advancements are in the production, handling, transportation and harvest of hogs.

The program establishes strict certification criteria for many aspects of hog production, including animal welfare standards.

Cargill also made the commitment more than two years ago to adopt group housing for gestating sows. "We decided to take a leadership role in sow housing because we think it's the right thing to do to support our customers and our brand," said Cargill Pork President Dirk Jones.

The company recently reported that it has achieved its goal of having 50 percent of contract farms using group sow housing rather than traditional gestation stalls for pregnant sows.

"Achieving this objective distinguishes us as a leader among pork companies," said Jeff Worstell, Cargill Pork vice president for live production and procurement. "As we contract with new grower operations, they too will need to meet Cargill's sow housing standards."

Cargill has also instituted the pork industry's Transportation Quality Assurance (TQA) policy that only truck drivers who are certified in humane handling of livestock are allowed to deliver animals to the company's plants. Any hauler not certified may not pass through the company gates.

"It is straightforward - if a driver isn't certified, he's stopped at our gates," said Jones. "Federal regulations cover animal handling in our processing plants, but there is no strict oversight of transportation prior to arriving at our plants. We decided to step up and take a leadership role to help ensure that all parts of the supply chain do what is needed."

Cargill has taken an industry-leading position by having 20 of its plant animal handling personnel–more than any other pork processor–trained and certified by the Professional Animal Auditor Certification Organization (PACCO), which is the elite, industry-recognized training body for meat plant auditors. Besides the PACCO training, all Cargill plant employees that handle livestock receive specialized training in humane animal handling.

Plant employees receive approximately 82 hours of Animal Welfare training each per year. Management personnel in the facilities are required to be TQA certified and supervisors that work with animals in the pens are certified instructors in TQA.

"We believe we have created the most comprehensive, humane animal handling training and certification program in the industry to ensure that we are being conscientious about the animals under our care and protection," said Dirk Jones.

Cargill has also implemented a number of other welfare initiatives, including video monitoring in its plants, which is designed to help animal welfare management teach and monitor performance in animal handling. It also established a Trucker Recognition Program in March 2008 that spotlights livestock haulers for individual performance in the proper handling of hogs and offers incentives for superior performance. In addition, Cargill has implemented an animal rescue program to respond to emergencies during transportation and has devoted trailers and teams in the Midwest to respond to truck accidents where swine are being transported.

Other major companies and their suppliers have been quick to join PQA Plus, including Hormel, who announced in December last year that it would require its producer suppliers of pork to be PQA Plus-certified and have their sites assessed under PQA Plus. It appears that, with this high level of uptake, the new assurance program will become the standard for the industry and play an important role in reassuring consumers both in the domestic and export markets.

≡WHJ≡

Corn DDGS withdrawal rates for hogs: Tissue composition, loin quality, retail appearance and sensory results

By Eduardo Beltranena[1,4], Jennifer Aalhus[2], Michael Dugan[2], Malachy Young[3], Neil Campbell[3], Matt Oryschak[1], and Ruurd Zijlstra[4]

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Take Home Messages

Feeding high levels of distillers dried grain and solubles (DDGS) may reduce feed cost. But corn DDGS is high in unsaturated oil that may soften the pork fat if fed at high levels to finishing pigs potentially affecting pork quality. We therefore evaluated implementing three removal or withdrawal patterns of corn DDGS out of the two finishing diets (20, 20%; 20, 10%; 20, 0%) vs. constant feeding 30% corn DDGS or no corn DDGS to market weight in order to mitigate both feed cost for producers and pork quality concerns for packers. Our results showed that feeding 30% corn DDGS or implementing a DDGS withdrawal strategy reduced the dissectible intermuscular fat in the picnic, butt, loin and ham. Implementing the DDGS withdrawal strategies also increased the weight of the squared and trimmed belly, proportionally reducing the weight of the spare ribs. Retail appearance, marbling scores and objective colour measurements diminished by feeding 30% vs. 0% DDGS, but were enhanced by implementing the three DDGS withdrawal strategies. Most importantly, sensory panellists were unable to practically detect differences in texture and flavour attributes in cooked chops and burger patties from hogs fed 30% or no corn DDGS. So, in contrast to a minor impact on retail appearance, there were some benefits of feeding 30% vs. no corn DDGS on primal cuts tissue composition, loin quality and no effect on sensory results.

In the previous issue of Western Hog Journal (Vol. 30, No. 5, pages 46 – 48), we summarized the effects on animal performance, carcass traits, and cost variables regarding feeding 30% corn distillers dried grain and solubles (DDGS), no corn DDGS or implementing three removal or withdrawal patterns of corn DDGS out of the finishing diets to mitigate both feed cost for producers and pork quality concerns for packers. This article reports the effects on primal cuts yield and tissue composition, loin quality, retail appearance and sensory evaluation of fresh pork from hogs so treated.

Briefly, one-fifth of the barrows or gilts were fed a soybean meal control diet over five growth phases until market weight (Figure 1). Four-fifths of the barrows or gilts were offered diets containing 30% corn DDGS replacing soybean meal for the first three grower phases instead. These hogs were then fed 20 and 20%, 20 and 10% or 20 and

Figure 1: Hogs were fed 0 (T1) or 30% (T2) corn DDGS during the first three grower phases. We then implemented three corn DDGS withdrawal strategies (T3, T4, T5) during the last two finishing phases

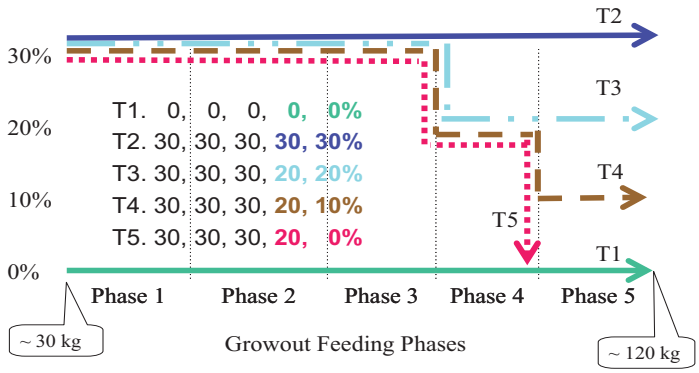
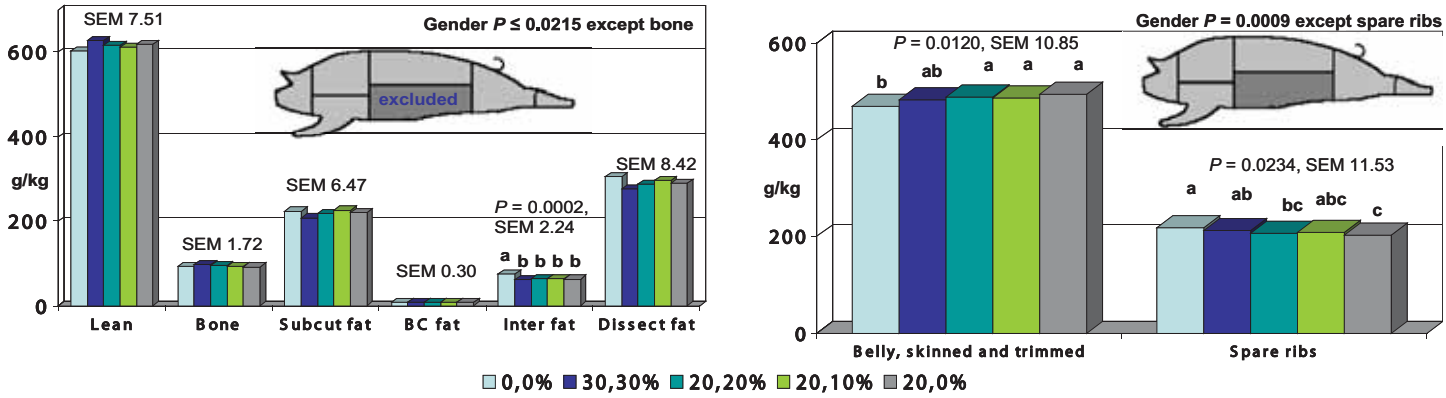


Figure 2: Feeding 30% corn DDGS or implementing one of three DDGS withdrawal strategies reduced the amount of intermuscular fat in each of the four primal cuts (picnic, butt, loin and ham) and all four leanest cuts combined (top). Implementing the three DDGS withdrawal strategies also increased the weight of the squared, trimmed belly, proportionally reducing the weight of the spare ribs (bottom)



0% corn DDGS in the last two finisher phases, respectively, until reaching market weight (Figure 1).

Our results showed that feeding 30% corn DDGS vs. no corn DDGS or implementing one of the three DDGS withdrawal strategies had no effect on the weight of the belly, picnic, butt, loin and ham or the amounts of lean, bone, subcutaneous fat, body cavity fat and dissected fat in the leanest cuts. Feeding 30% corn DDGS or implementing a DDGS withdrawal strategy reduced the amount of intermuscular fat in each of the four cuts (picnic, butt, loin and ham)

continued on page 50

and all four primal cuts combined (Figure 2). Implementing a DDGS withdrawal strategy also increased the weight of the squared, trimmed belly, proportionally reducing the weight of the spare ribs.

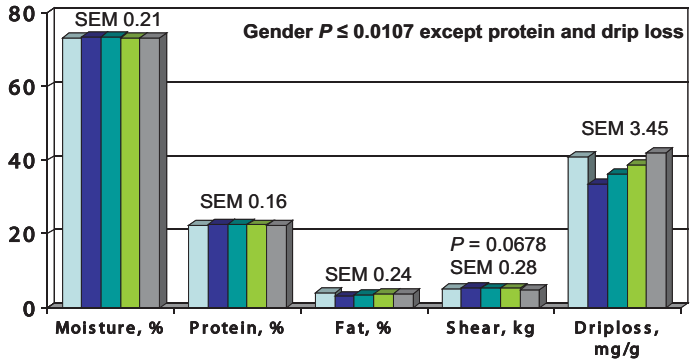
As expected, there were typical gender differences independent of feeding DDGS. Castrates had larger shoulder butts, more fat and less lean, but similar bone content in primal cuts and spare ribs compared to gilts (data not shown).

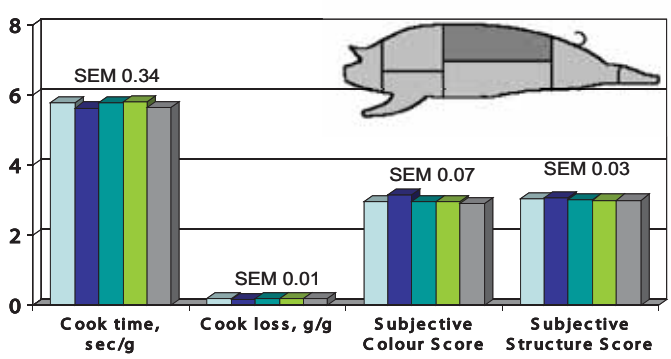
There were no significant effects of feeding 30% corn DDGS or implementing a DDGS withdrawal strategy on loin quality except for uncooked loin chop lightness (Figure 3). Feeding 30% corn DDGS significantly enhanced loin chop darkness and numerically reduced both drip loss and the proportion of intramuscular fat, while increasing shear force values. Implementing the withdrawal strategies normalized these results with the 20, 0% DDGS withdrawal strategy having the greatest effect.

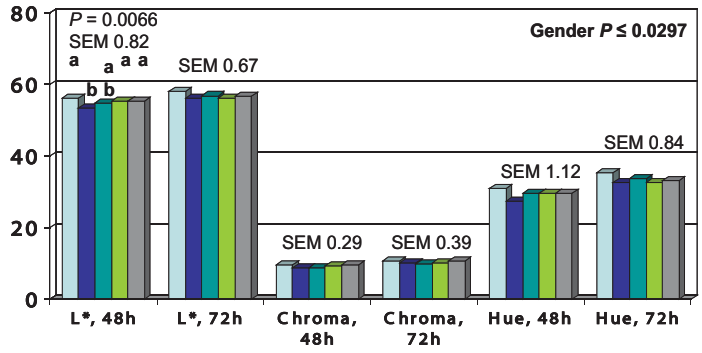
As expected, loin chops from castrates had higher fat and lower moisture content and required slightly less force to shear a cooked core of pork. Loin chops from gilts had slightly lower initial pH, and chroma (intensity of colour saturation) at 48 hours but not at 72 hours after slaughter compared to loin chops from barrows (data not shown).

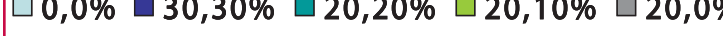
Five trained panellists evaluated uncooked loin chops from hogs displayed under refrigerated retail conditions. Over 3 days, they observed that retail appearance became less acceptable and marbling was reduced, but lean colour was enhanced by feeding hogs 30% corn DDGS vs. no corn DDGS (Table 1). Similarly, objective colour

Figure 3: There were not effects on loin quality except that feeding 30% vs. no corn DDGS reduced uncooked loin chop lightness (L*) at 48h but not at 72h after slaughter (bottom). Implementing both the 20, 10% and 20, 0% DDGS withdrawal strategies normalized lightness 48h after slaughter









L* is lightness; higher values indicate more light is reflected back; the surface appears whiter or paler

Chroma refers to the intensity of colour saturation

Hue angle describes the extent of a specific tint, for example, light pink

Table 1: When displayed in a refrigerated retail case for 3 days, five trained panellists observed that retail appearance became less acceptable and marbling was reduced, but lean colour was enhanced by feeding hogs 30% corn DDGS vs. no corn DDGS (top). Similarly, objective colour measurements taken using a light reflectance camera and the proportion of meat pigments in different colour states were impacted by feeding 30% corn DDGS vs. no corn DDGS (bottom). However, implementing the three DDGS withdrawal strategies improved these measurements

	Corn DDGS level fed in the last two finisher phases						
	0, 0%	30, 30%	20, 20%	20, 10%	20, 0%	SEM	*P* value[1]
Subjective Measurements							
Retail appearance[2]	6.44^{ab}	6.24^{c}	6.30^{bc}	6.30^{bc}	6.51^{a}	0.17	0.0388
Marbling score[3]	3.06^{a}	2.79^{c}	2.87^{bc}	3.01^{ab}	2.91^{abc}	0.11	0.0075
Lean colour score[4]	3.15^{bc}	3.37^{a}	3.10^{c}	3.21^{b}	3.24^{b}	0.07	<.0001
Surface discolouration[5]	1.76	1.82	1.96	1.93	1.66	0.16	0.2943
Colour of discolouration[6]	1.51	1.55	1.71	1.62	1.46	0.10	0.3142
Objective Measurements							
L*[7]	54.39^{a}	51.99^{c}	53.88^{ab}	54.20^{ab}	53.47^{b}	0.94	<.0001
Chroma[8]	12.21^{a}	11.34^{b}	11.55^{b}	11.67^{b}	12.29^{a}	0.30	<.0001
Hue[9]	66.49^{bc}	67.77^{ab}	68.06^{a}	67.85^{ab}	65.13^{c}	1.00	<.0001
Metmyoglobin (brownish),%	0.10^{a}	0.07^{c}	0.08^{bc}	0.09^{ab}	0.09^{ab}	0.01	0.0099
Myoglobin (purplish-red), %	0.26^{b}	0.31^{a}	0.30^{a}	0.29^{ab}	0.27^{ab}	0.03	0.0297
Oxymyoglobin (bright-cherry red), %	0.65	0.62	0.62	0.62	0.64	0.02	0.2355

[1] Means in a row with different superscript letters differ (P < 0.05)
[2] Extremely undesirable = 1 and extremely desirable = 8
[3] Devoid = 1 and abundant = 6
[4] White = 1 and extremely dark red = 8
[5] Discolouration 0% = 1 and 100% = 7
[6] No browning = 1 and black = 7
[7] Lightness; higher values indicate more light is reflected back making the surface appear whiter or paler
[8] Intensity of colour saturation
[9] Extent of specific tint, for example, light pink

measurements taken using a light reflectance camera and the proportion of meat pigments in different colour states were impacted by feeding 30% corn DDGS vs. no corn DDGS. However, implementing the three DDGS withdrawal strategies improved these measurements.

Castrates were rated as having more marbling and better lean colour scores than gilts, corresponding with slightly darker and redder instrumental readings (data not shown).

Eight sensory panellists also evaluated cooked chops and burger patties consisting of 20% fat and 80% lean manufactured using pork from hogs involved in this study. Samples were rated using descriptive scales for texture and flavour (Table 2). Panellists did not perceive any significant differences in the chops. In the higher fat content burgers in contrast to chops, there was a tendency for sustainable juiciness to be numerically higher and for initial tenderness to be statistically higher in hogs fed 30 and 30%, 20 and 20%, or 20 and 10% corn DDGS until reaching market weight compared to controls fed no corn DDGS; those of hogs fed 20 and 0% corn DDGS were rated intermediate.

Castrates had more mushy pork than gilts, but there was no interaction with corn DDGS feeding or dietary removal rate (data not shown).

In summary, the results of this study indicate that feeding 30% corn DDGS or implementing a DDGS withdrawal strategy reduced the dissectible intermuscular fat in picnic, butt, loin and hams. Implementing the DDGS withdrawal strategies also increased the weight of the squared and trimmed belly, proportionally reducing the weight of the spare ribs. Retail appearance, marbling and objective colour measurements were diminished by feeding 30% vs. 0% DDGS, but were enhanced by implementing the DDGS feed withdrawal strategies. Most importantly, sensory panellists did not detect texture and flavour differences in cooked chops and burger patties from hogs fed 30% or no corn DDGS. The only difference was patties of hogs fed 30% DDGS were more tender initially, after first chewing. So, in contrast to a minor impact on retail appearance, there were some benefits of feeding 30% vs. no corn DDGS on primal cuts tissue composition, loin quality and no effect on sensory results.

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A future article in the Western Hog Journal will summarize the effects of feeding 30% corn DDGS or implementing the withdrawal strategies described herein on bacon quality, fatty acid composition and fat hardness. As hogs grow, they lay down more fat in the belly than in any other muscle tissues. Thus greater proportion of fat to lean in bellies, could exacerbate the effects of feeding high levels of corn DDGS on fat quality.

The fresh pork work described here was conducted at Agriculture and Agri-food (AAFC) Canada Lacombe Research Centre. The Meat Lab at Lacombe is an invaluable research resource and unique in western Canada. Key to our industry is not only the federal investment in facilities and equipment at Lacombe, but also the expertise and experience of AAFC scientists. Research preparing processed pork products with pork from hogs involved in this corn DDGS trial is also currently being conducted at Alberta Agriculture and Rural Development Food Processing Centre in Leduc. With two-thirds of the pork produced in western Canada being exported, these meat research facilities play an important role to evaluate pork value-adding strategies, diversify pork products and support our industry to increase pork exports.

Acknowledgements: We acknowledge the financial support of Alberta Agriculture and Rural Development under the Agricultural Policy Framework, a federal-provincial-territorial initiative. Funding was also provided by the US Grains Council, Agriculture and Agri-food Canada (in-kind) and the Alberta Livestock Industry Development Fund.

Table 2: Sensory panellists could not tell apart cooked chops or burger patties from hogs fed 30% corn DDGS or no corn DDGS. Assessing nearly 20 attributes, panellists did not perceive any differences in the chops. In the higher fat content burgers (80% lean, 20% fat ground), there was a tendency for sustainable juiciness to be numerically higher and for initial tenderness to be statistically higher in hogs fed 30 and 30%, 20 and 20%, or 20 and 10% corn DDGS until reaching market weight compared to controls fed no corn DDGS; those of hogs fed 20 and 0% corn DDGS were rated intermediate

	Corn DDGS level fed in the last two finisher phases					
	0, 0%	30, 30%	20, 20%	20, 10%	20, 0%	SEM
Taste values						
Initial tenderness[1]	7.73b	7.82a	7.86a	7.83a	7.80ab	0.06
Initial juiciness[2]	5.42	5.38	5.46	5.31	5.35	0.18
Flavour desirability[3]	5.21	5.28	5.19	5.18	5.16	0.11
Pork flavour intensity[4]	5.19	5.15	5.20	5.07	5.12	0.11
Off flavour intensity[5]	7.23	7.30	7.18	7.33	7.20	0.14
Sustainable juiciness[2]	7.73	7.84	7.85	7.82	7.78	0.06
Overall tenderness[1]	5.48	5.57	5.60	5.48	5.45	0.17
Overall palatability[6]	4.82	4.78	4.81	4.70	4.69	0.15
Flavour descriptors[7]						
Metallic	0.63	0.63	1.86	0.71	1.96	0.86
Off sour	51.79	37.68	39.09	39.29	39.64	5.24
Barny	6.43	6.34	8.24	6.43	6.34	3.17
Stale	4.64	7.41	5.50	6.52	3.99	2.00
Rancid	0.00	2.14	1.73	1.25	0.76	1.09
Other	3.21	5.36	6.25	5.00	1.96	2.04
Unidentified	11.87	15.45	13.80	12.59	18.12	2.71
Texture descriptors[7]						
Typical pork	21.43	25.00	23.99	28.21	27.27	3.50
Mushy	73.48	69.29	71.92	64.91	65.71	5.21
Mealy	4.64	8.48	7.95	10.71	9.00	2.19
Spongy	21.87	22.23	20.30	24.37	25.27	4.87
Rubbery	0.00	0.00	0.00	0.00	0.00	0.00

[1] Extremely tender = 9; extremely tough = 1. Means with different superscript letters differ ($P < 0.05$)
[2] Extremely juicy = 9; extremely dry = 1
[3] Extremely desirable - 9; extremely undesirable = 1
[4] Extremely intense pork flavour = 9; extremely bland pork flavour = 1
[5] Extremely bland = 9; extremely intense = 1
[6] Extremely desirable - 9; extremely undesirable = 1
[7] Percentage of panellists attributing that descriptor to the sample

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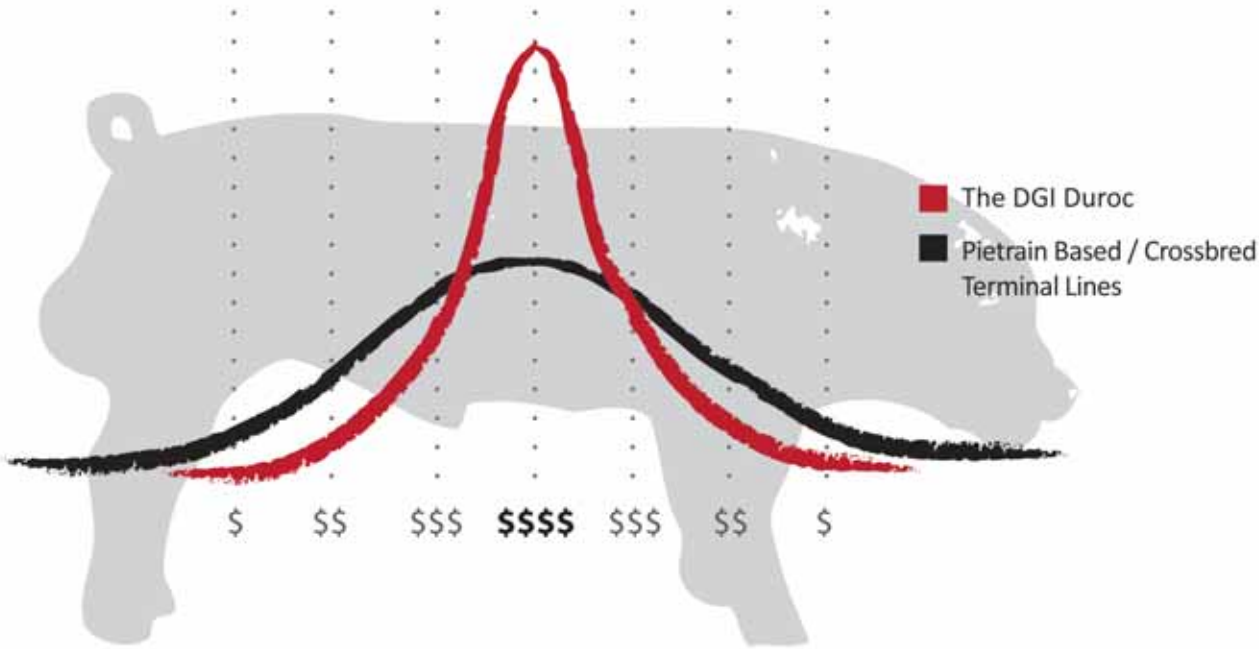

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Benchmarking – a guideline for the future

By Jan Geurts, Nutrition Partners Inc.

"Producers who see their future in pig production need to be competitive and to do so need to review both physical and financial performance against similar units"

What is benchmarking?

Benchmarking is comparing business performance with that of others. In that way individual producers can:

1. Identify specific strengths and weaknesses of their business.
2. Helps to focus efforts on the areas of performance that will have the biggest impact on the businesses profit
3. Determine the best way for the development of the business.
4. It will reveal over a number of years if management changes have worked and highlight if any further changes are needed.

International benchmarking

A good benchmark project was done in 2004 by Danish Pig Production. It compared costs in international pig production. This comparison showed the strengths and weaknesses of the Canadian pig industry and also provided guidelines as to where the opportunities are.

Technical performance

Table 1: Average production efficiency per country 2004

Average production efficiency	CAN	US	DK	NL	UK	Avg
Weaned pigs, year/sow	21.4	19.9	24.7	24.3	20.5	22.2
Pig produced, sow/year, slaughtered	20.3	18.3	22.5	23.2	18.1	20.5
Litters/sow/year	2.20	2.20	2.25	2.33	2.13	2.22
Liveborn/litter	10.8	10.3	12.7	11.9	10.7	11.3
Mortality in farrowing section (%)	10.0	12.0	14.0	12.0	10.0	11.6
Mortality in weaning section (%)	2.0	4.0	5.0	2.0	5.0	3.6
Mortality in finishing section (%)	3.0	4.0	4.0	3.0	7.0	4.2
Feed conversion in weaner section	1.56		1.75	1.64	1.8	1.70
Feed conversion in finisher section	2.96	3.18	2.69	2.7	2.8	2.85
ADG (g) in finisher section	826	700	835	774	630.0	753
Weaning weight	5.0	5.6	7.2	7.8	7.4	6.6
Weight at transfer to finisher section	23.0	22.7	30.3	25.5	36.4	27.6
Live weight at slaughter	113.0	118.0	102.0	113.0	97.9	108.8
Price of finisher feed ($ Can/tonne)	$ 200	$ 185	$ 282	$ 304	$ 315	$ 257
Feed cost /kg gain finishers	$0.59	$0.59	$0.76	$0.81	$0.87	$0.73

The market prices are quite different in all these countries, but to see what our strengths are with the same market price we used the following assumptions:

- 250-sow farrow-to-finish farm.
- 1200 kg sow feed/sow/year costing in 2004: $214.00 in Canada and $275.00 as an average (same ratio as the difference between finisher feed in Canada and Average cost)
- Starter feed cost/tonne in 2004: $375.00 in Canada and $482.00 as average (same ratio as difference between finisher feed in Canada and Average cost)
- Market price $ 1.45 and index 110

At Nutrition Partners we use models to fully explain the financial difference in a comparison. With the *Farrow to Finish Analyzer* model using these assumptions we calculated the following financial numbers:

Table 2: Comparison of 250-sow Canadian farm with average of 4 other countries

	Canada /sow/year	Average /sow/year	Difference /sow/year
Return from shipped pigs	$ 2,929.15	$ 2,841.61	$ 87.54
Cost of sow feed	$ 256.80	$ 330.00	-$ 73.20
Cost of starter feed	$ 213.31	$ 352.21	-$ 138.90
Cost of grower/finisher feed	$ 1,012.27	$ 1,071.91	-$ 59.64
Total feed cost	$ 1,482.38	$ 1,754.12	-$ 271.74
Return over feed cost	$ 1,446.77	$ 1,087.49	**$ 359.28**
Analysis - financial impact of differences in technical-financial numbers			
Litters/sow/year	-$ 13.15		
Live born/litter	-$ 67.59		
Mortality (%) pre-wean	$ 27.16		
Mortality (%) wean-ship	$ 42.64		
Kg sow feed/shipped.pig	-$ 1.94		
Price sow feed	$ 73.20		
Kg starter feed/shipped pig	$ 59.10		
Price starter feed	$ 78.19		
Kg Gro-Fin feed/shipped pig	-$ 185.76		
Price Gro-Fin feed	$ 237.74		
Dressed weight	$ 109.69		
Total difference	**$ 359.28**		

This shows clearly where Canada's strong points are and also the weaknesses. Healthy herds with low mortalities are a clear advantage. The biggest advantage is coming from our lower feed prices. However, The amount of grower-finisher feed used gives quite a bit of room for improvement and this is due to the higher feed conversion ratio.

Benchmarking in Canada

As you can see, performance and feed prices have a significant impact on the bottom line. But when you compare within each country and look at the top performers compared to the bottom, then you see huge differences in performance.

Table 3: Comparison of sow performance between Denmark, Canada and the USA

Sow performance				Difference %
Pigs sold at 50 lb/sow/year	Average	Bottom 25%	Top 25%	Bottom-Top
Denmark 2007	25.2	22.2	28.1	26.6
Pigs weaned/sow/year	Average	Bottom 10%	Top 10%	
Canada 2008 (17 farms)	23.4	21.1	25.8	22.2
USA 2008 (343 farms)	23.3	20.5	26.0	27.1

Unfortunately, there is very little reliable information on finishing performance from Canada and the USA, however the finisher farms in Denmark show the same trend as the sow barns.

Table 4: Comparison of finishing herd performance in Denmark

Finisher performance				Difference %
Denmark 2007	Average	Bottom 25%	Top 25%	Bottom-Top
Daily gain (g)	866	791	919	16.2
Feed conversion	2.79	3.02	2.59	-14.2
Mortality %	4.3	5.8	3.5	-39.7

What kind of financial impact can these differences have on your bottom line ?

Analyzing with the *Farrow To Wean Analyzer* model and simulating the difference between the Top 10% and the Bottom 10% shows how big the difference can be on a Farrow to Wean operation (Table 5).

It can be clearly seen what the most important factors are. If the feed price of the Bottom 10% was $ 10 /tonne lower than the Top 10%, it would save $ 17.90 /sow/year. Cost of the ration is important, but always has to be weighed against performance. $ 10 /tonne higher nurse sow feed costs $ 4.00 extra/sow/year. It doesn't take much improvement in performance to gain that back.

Finisher performance

With the *Finisher Analyzer* model we can see the financial impact of the performance (Table 6).

This example shows that the impact of the feed conversion is particularly significant. These kind of differences in feed conversion can be seen in the field.

Feed cost has its impact too. $10 more cost/tonne equates to $ 3.07 extra cost per shipped pig.

As you can see benchmarking combined with good analysis of the numbers will:

- Identify specific strengths and weaknesses on a farm.
- Helps to focus efforts on the areas of performance that will have the biggest impact on the businesses profit
- Determine the best way for the development of the business.

This shows how important it is to keep track of all technical and financial performance. Benchmarking your performance will help you to stay competitive in a tough business. If you don't keep

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Table 5: Difference in margin over feed between the top 10% and bottom 10% herds in Canada

Assumptions	Top 10%	Bottom 10%
Litters/sow/year	2.44	2.35
Live born /litter	12.04	10.59
Pre weaning mortality %	12.0	15
Pigs weaned/sow/year	25.80	21.12
Weaning weight	5.5	5.5
Shipping weight of weaners	22.7	22.7
Mortality (%) in nursery	2.0	4.0
Feed conversion in nursery	1.43	1.69
Kg dry sow feed /sow/year	800	800
Kg nurse sow feed /sow/year	400	400
Price dry sow feed /tonne	$ 225	$ 225
Price nurse sow feed /tonne	$ 295	$ 295
Price starter feed /tonne	$ 400	$ 400
Price weaner sold	$ 57.60	$ 57.60

	/sow/year	/sow/year	Difference /sow/year
Return from shipped pigs	$ 1,456.34	$ 1,167.84	$ 288.50
Cost dry sow feed	$ 193.60	$ 193.60	$ -
Cost nurse sow feed	$ 129.20	$ 129.20	$ -
Cost starter feed	$ 248.72	$ 236.04	$ 12.68
Total feed cost	$ 571.52	$ 558.84	$ 12.68
Return over feed cost	$ 884.82	$ 609.00	**$ 275.82**

Analysis - financial impact of differences in technical-financial numbers

Litters/sow/year	$ 32.62
Live born/litter	$ 102.32
Mortality (%) pre-wean	$ 25.56
Mortality (%) wean-ship	$ 14.78
Kg dry sow feed /shipped pig	$ 38.35
Price dry sow feed	$ -
Kg nurse sow feed /shipped pig	$ 25.59
Price nurse sow feed	$ -
Kg starter feed/shipped pig	$ 36.59
Price starter feed	$ -
Shipping weight of weaner	$ -
Total difference	**$ 275.81**

track of those numbers, you can't make sound business decisions and run the risk of leaving a lot of money on the table. Optimizing the operations physical and financial performance will help to keep your farm competitive and this can best be done by regular benchmarking and analysis.

Table 6: Difference in margin over feed between the top 25% and bottom 25% finishing herds

Assumptions	Top 25%	Bottom 25%
Daily Gain (g)	920	790
Feed conversion	2.71	3.20
Start weight (kg)	22.7	22.7
Shipping weight live (kg)	118.8	118.8
Index	112.0	110.0
Mortality (%)	2.0	4.0
Feed price/tonne	$ 225.00	$ 225.00
Weaner price	$ 55.00	$ 55.00
Market price ($/kg, index 100)	$ 1.45	$ 1.45

	Per shipped pig	Per shipped pig	Difference
Return per shipped pig	$ 154.28	$ 151.53	
Cost of weaner	$ 55.00	$ 55.00	
Cost of feed	$ 58.57	$ 69.16	
Cost of mortality	$ 1.65	$ 3.49	
Return over feed	$ 39.07	$ 23.88	**$ 15.19**

Analysis - financial impact of differences in technical-financial numbers

Feed conversion	$ 10.59
Mortality	$ 1.84
Index	$ 2.76
Total difference	**$ 15.19**

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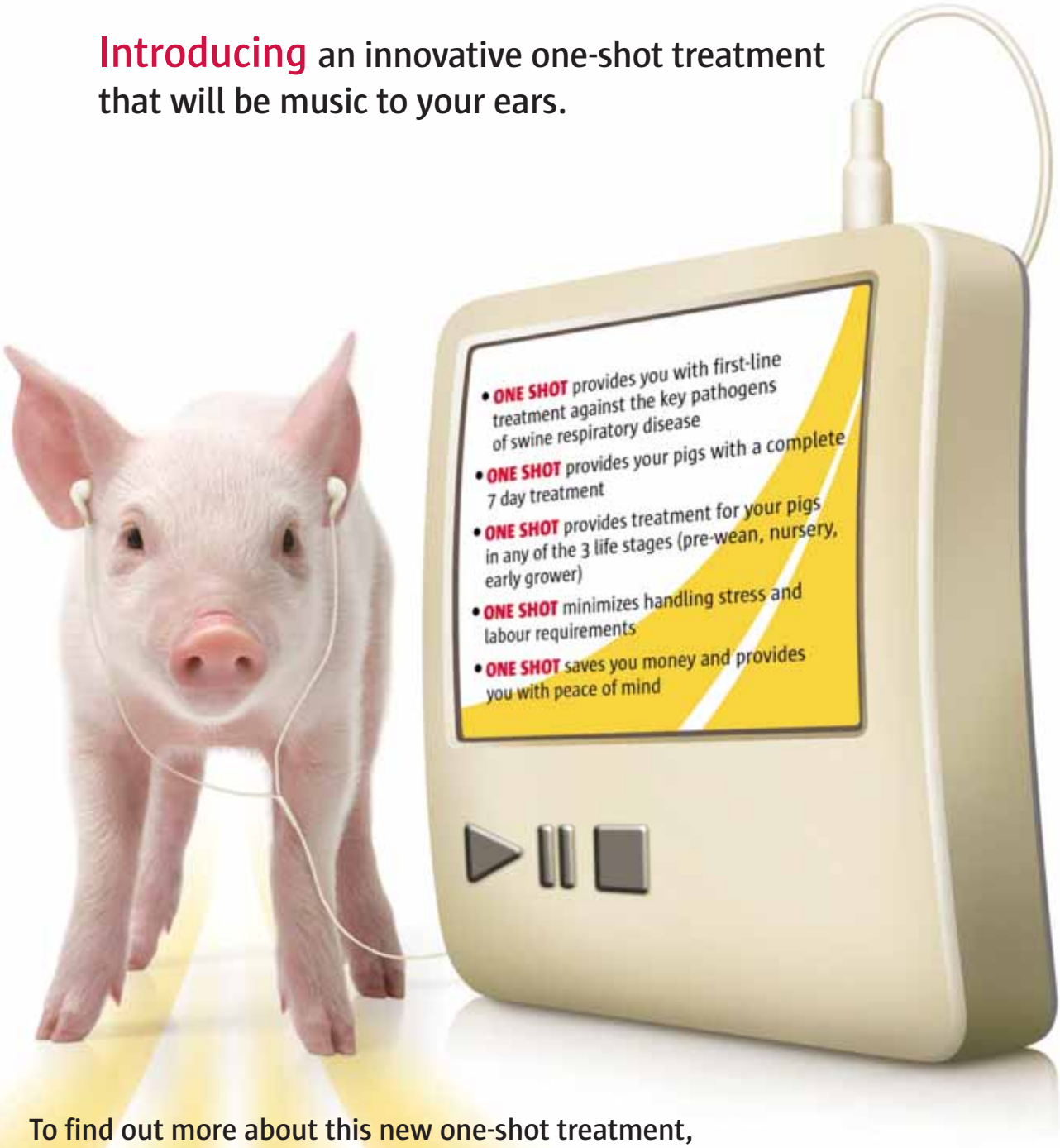

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Pfizer Animal Health

Evaluation of vaccine performance: Part 2 – What went wrong and how do I stop it from happening again?

By Western Swine Health Associates: Drs. Egan Brockhoff, Chris Byra, Gail Cunningham, Frank Marshall, Chris Misutka, & Peter Pawluk

In Part 1 of this paper, we reviewed how producers and their veterinarians make decisions regarding which vaccines to use. We reviewed how vaccines work to help prevent disease, reduce disease, and/or reduce shedding of disease-causing micro-organisms. We looked at types of vaccination protocols, and how to pick a target group to vaccinate. Finally, we looked at manufacturer's recommendations, and when, if ever, they can be modified.

In Part 2, we move on to focus on two main areas. Firstly, we will examine why we sometimes do not see the benefit that we were hoping for when we vaccinate pigs. Then we will summarize the steps to take to ensure that vaccines you chose provide a net benefit on your farm.

Ongoing research into vaccines and vaccination technology continue to teach us new strategies for best use of vaccines in the pig barn, and help to refine old ones. Some of the examples used in this paper are taken from recent research presented at the spring American Association of Swine Veterinarians conference in Dallas. Hopefully, some of the ideas below can help you and your veterinarian continue to refine which strategies make the most sense in your herd.

Reasons for vaccine failure

"I've missed more than 9,000 shots in my career. I've lost almost 300 games. 26 times I've been trusted to take the game winning shot and missed. I've failed over and over and over again in my life and that is why I succeed." Michael Jordan.

Reasons for failure of a vaccine include the following:

Incorrect administration

- Wrong site: This sounds easy to do right, right? However, have a look at a pen of weaner pigs after they have been given a vaccine: are all of the injection sites in the correct spot on the neck? Or did half of the pigs wiggle, or turn, and then the vaccine was given too high on the neck? Is the angle of the needle correct? Did you use the proper size of a needle? For example, are any of you still using a 1" needle to give intramuscular injections to sows? Check your CQA Manual or ask your veterinarian: this needle is too small.
- Dose: We discussed the question of half-dosing vs. full dosing in Part 1 of this paper, in reference to PCV2 vaccines. Here, we refer to full dose, and the difference between products. Look at PLE (Parvo-lepto-erysipelas) vaccines as an example. Some are 5 cc dose and some are 4 cc dose. A new product soon on the market will be a 2 cc dose. Over-dosing will mainly cost you money, although there also may be a reaction at injection site for example. Under-dosing may mean that the immune system is not stimulated to the extent to produce the immune response you desire.
- Vaccine interference: This is especially important with modified-live water soluble vaccines. We read the instructions, and we remove antibiotics from the water and feed before and after delivering the vaccine. But what about water line sanitizers? Chlorination of the water, for example, can inactivate modified-live vaccines, and so these products must also be removed during vaccination time.
- Target group: For many products, gilts require an initial vaccination and a booster. Did your breeding company vaccinate those gilts you purchased with a PLE vaccine? If so, did you give a booster? Do these gilts require a booster? If in doubt, ask your veterinarian.

Incorrect timing

- Ileitis vaccine is one of the more difficult ones to get the timing correct on. *Lawsonia intracellularis* – the causative agent of ileitis – has a long incubation period, and exposure to the agent is not always consistent, even from group to group on the same farm. This water-soluble vaccine must be given well in advance of exposure to the pathogenic agent to be effective: given too late, it is a waste of $$.
- PCV2 vaccines: Should you use a one shot product, especially if given to pigs at weaning? One recent study (AASV 2009) compared a 1 dose vs. 2 dose PCV2 vaccine, and found no difference in PCV2-associated lesions in lymph nodes at slaughter, when pigs were challenged with PCV2 virus 81 days after vaccination.

Change in the pathogen type

- Swine Influenza: The new strain that has caused so much (undue) stress in the hog industry of late is markedly different from strains available in commercial SIV vaccines. SIV virus is unique in its ability to change rapidly, so vaccines against SIV must constantly be modified to remain as effective as possible. A new commercial vaccine on the market has greatly improved protection against H3N2 SIV strains that we may encounter; however, H1N1 strains – especially the recent one – are not included in this vaccine.
- Erysipelas: The Iowa State University pathology laboratory reviewed cases of clinical erysipelas outbreak investigations submitted to them in 2008 (AASV 2009). They discovered three main strain types of *Erysipelothrix rhuseopathiae:* types 1a, 2, and 21. Are all of these serotypes covered by all of the vaccines?

Concurrent disease

- PCV2 and PRRSV: Dr. Brent Jones presented data at a recent Banff Pork Seminar that showed lower death loss with half-dose

PCV2 vaccine vs. full-dose vaccine. In further investigation of this improbable conclusion, Dr. Jones discovered the reason for this result: pigs were being given their 2nd PCV2 vaccine at the same time that they were becoming naturally exposed to PRRS virus. The natural infection combined with the immune stimulation of the PCV2 vaccine, created a situation that was more challenge for the pigs, rather than less.

- PCV2, PRRSV and PPV (parvovirus): Another case study highlighted a farm in which P1 mummies had exploded to 61% of total born pigs, and born alive crashed to 5.9. Submission of some of the mummies to the lab revealed that pigs were being simultaneously infected by both PPV & PCV2. This farm had recently switched PLE vaccines: was this the cause of the problems? On this farm, they went back to their original PLE vaccine, and began vaccinating gilts against PCV2 as well, and born alive and mummies returned to normal.
- Mycoplasma vaccine: does it increase problems with PCVAD on farms? This is not as much of a concern now that effective PCV2 vaccines are being commonly used on most farms. A previous study (AASV 2004) tested four different Mycoplasma vaccines, and found that the adjuvants of all four could contribute to the problem of making PCVAD worse in vaccinated pigs.

Concurrent stress

- Diet change: An interesting disease investigation (AASV 2009) found that a diet change at day 8 post-weaning was severe enough that it interfered with the pigs' ability to respond to a PCV2 vaccine given at the same time.
- Diet ingredients: Another lecture presented at the recent AASV conference found that plasma protein supplementation of the diet of mice led to reduced immune response to respiratory infections in a subsequent challenge model. It will be interesting to see if this same effect can be reproduced in pigs.
- Flooring type: Another study presented at the conference compared partial slat flooring to full slat flooring, to see whether there was a relationship to sero-conversion to *Lawsonia intracellularis*. The study found no difference in flooring type, and so tailoring Ileitis vaccine delivery to type of flooring does not appear to be a predictable method for properly timing delivery of this vaccine.

Switching products / mixing products

This has become a real issue lately. PCV2 vaccines are highly effective and are therefore used on most farms. However, producers appreciate the convenience of combination vaccines, and the pigs require less handling as well. Some producers with stock that are Mycoplasma positive have used combination Mycoplasma-Erysipelas products; combination Mycoplasma-PCV2 products are now available, but not all contain Erysipelas protection as well. If you switch from one combination to a different one, is there some protection you have omitted that may be important to your farm? If you are not sure, ask your veterinarian.

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So, then how do you ensure that you have all the protection that you need? There have been some producers combining two different vaccine products– from two different vaccine companies – in the same syringe. This is simply asking for trouble. Firstly, this practice is a violation of CQA protocols because it is considered compounding. Secondly, this practice can lead to reduced performance: a trial conducted by a veterinarian in Ontario compared a licensed combination of PCV2 and Mycoplasma vaccines to an unlicensed combination of the same type of vaccines. The licensed combination led to improved average daily gain of 57.7 grams per day, and reduced mortality by 31.1% compared to the group receiving the non-licensed combination. An economic model was applied to the results, and found that combining products the two non-licensed products led to a net loss of $6.38 per pig.

Maternal interference

- Mycoplasma: One study at the 2009 AASV had pigs vaccinated with one-dose product at 1 day old and then challenged 2 weeks later with Mycoplasma hyopneumoniae. Vaccinated pigs produced an immune response and showed reduced clinical signs compared to non-vaccinated controls.
- Erysipelas: Even if sows are vaccinated pre-farrowing against erysipelas, we should expect pigs to amount an immune response to vaccination at 3 weeks old. Vaccination of pigs younger than three week of age, however, may lead to problems due to interference from colostrum-derived antibodies.
- PCV2: A paper presented at the AASV showed data associated with PCV2 vaccination, and concluded that vaccination of sows with this product did not affect ability of piglets to respond to vaccine at 21 days.
- PPV vaccination of sows leads to interference of active immunity in her litter up to 3-6 months old (2009 AASV, among others). This is why gilts that receive their first PLE vaccine at younger than 6 months should not be considered to be protected against parvovirus.

Compliance

On many farms, vaccination is being done by employees, not the manager or owner, and in many cases, they do not realize the consequences of improperly delivered vaccines. Vaccination is not a glamorous task, and so compliance must be monitored. Is this a reason to consider a one-dose product over a two dose product?

Summary: Do vaccines pay… or do they cost?

Through the course of this paper and the previous one, we have detailed the many benefits of a properly planned and implemented vaccination program. So, now that you have decided which vaccines will play a role in health management of your herd, how do you ensure that they will work as advertised? If you follow the Five Rules for Successful Vaccination, below, you maximize the benefit that you will see:

1. First of all, if in doubt, **read the label**. In most cases, this means that you use full dose, according to manufacturer's recommendations. They have run the trials and have licensed the product according to specific guidelines. If you deviate from the guidelines, and the vaccine does not deliver as promised, don't blame the vaccine.
2. **Benchmark** vaccine usage on a per-sow or per-pig basis. Are you or your staff using enough of the appropriate vaccine, based on number of weekly services, weekly farrowings, or number of pigs weaned? Below-target usage can lead to inadequate protection. Too much usage is a waste of money. We benchmark our production: we should benchmark our vaccination (and medication) usage as well.
3. Apply a partial budget model to new and ongoing decisions that must be made regarding vaccine use. What is the cost of a new vaccine. What is the expected return? Dr. Luc Dufresne, when he was working in North Carolina, coined a concept called Return on Treatment, that he used when making a recommendation for a company to try a new vaccine. Dr. Dufresne suggested that the return must be at least 5 to 1 to make an initial recommendation, because vaccines are an up front cost, and because other factors – mentioned above – can affect the ability of a vaccination protocol to deliver as expected. On your farm, you may accept less than a 5 to 1 return, especially on a product that is easy to deliver, but you should expect a positive response or else it is not worth doing.
4. Run a trial, with controls. One study in the AASV 2009 Proceedings compared 2 PCV2 vaccines. 315 barrows were used for the trial: 105 per treatment group, plus 105 non-vaccinated controls. Mortality was tabulated, and the following was seen: Controls had 7.6% mortality; Vaccine product A had 1.9% mortality, Vaccine product B had 4.8%. Were there enough animals in this trial to say that the differences in mortality were truly different, or could they have happened by chance? This paper did not subject the results to statistical analysis. On your farm, make sure that you test enough animals so that you are satisfied with results you see.
5. Finally, **consult your veterinarian** to keep up to date regarding new vaccine information. As mentioned in the article, a new influenza vaccine is now on the market, and a new PLE vaccine is on its way. New combination vaccines are being planned and evaluated by pharmaceutical companies on an ongoing basis. Read the literature and talk to the company sales and technical people. But refer to your veterinarian as the most reliable source of unbiased information to help you make these important decisions for your farm and your animals. ≡WHJ≡

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* When used according to label recommendations, Virkon 1% solution meets the biodegradability requirements of the Organisation for Economic Co-operation and Development (OECD).
** See Virkon 1% solution MSDS.

• International Round-up

English producers to pay for disease control

English livestock producers will have to pay for the cost of dealing with outbreaks of Foreign Animal Diseases by 2012, which is estimated to be in the region of £0.80 ($1.50) per pig. The money will be raised by an independent board, which will charge all livestock keepers a compulsory registration fee. The Department of Environment, Farming and Rural Affairs (Defra), which handles disease control, initiated the move after the government incurred massive costs in the 2001 Foot and Mouth Disease outbreak and then again in 2007, when a government lab leaked FMD virus. The income from producers will cover half of Defra's annual £44m annual expenditure on exotic disease preparedness and surveillance.

Integrate feeding program into whole farm plan, says Patience

Pork producers who don't include nutrition and diet information as part of their whole farm plan are missing the boat, says John Patience, associate Professor at Iowa State University.

Professor Patience, who went to ISU in 2008 following a 21-year stint at Prairie Swine Centre in Saskatchewan, said it's crucial for producers to integrate the design of their feeding program into the plan for the whole farm.

"For example, some producers' goal is to maximize throughput growth rate yet minimize feed costs," he said. "This is one time when the two objectives disagree and a major disconnect occurs. Farmers must work together with the nutritionist to make sure feeding is included in the major plan."

Professor Patience and his lab manager Amanda Chipman are focusing their research on possible solutions to economic issues facing farmers, with the goal of helping create economic success. Their specific applied swine nutrition studies target energy metabolism, alternative feed ingredient evaluation, and feeding and management of weanling and grow-finish pigs.

"Our current projects will take from two to seven years, with longer times possible for more complex parts," Professor Patience said. "We're combining nutrition with related issues, in order to help improve long term sustainability of the pork industry."

As Professor Patience meets with producers and others in the state's pork industry, he said there are some important "take home" messages.

"Producers can use alternative feeding ingredients to help minimize feed costs, because doing so offers more flexibility and more options. This can translate into more control over feed costs, especially if that product is competitively priced," he said. "However, if a producer isn't familiar or has not experience with a particular product, there's the possibility of increased risk."

Professor Patience said research like his plays a major role in assisting producers because it provides quality information on new products that producers can trust.

"For example, even though corn and soybean meal rations dominate swine diets in Iowa, pigs can perform equally well on rations with different ingredients just as they did in the past," he said. "Farmers just need to conquer their fear of using new products as long as the economics are favorable to that use. Our research will help determine that."

Isotope technology can "fingerprint" pork products

A new technique for identifying the origin of fresh pork or processed products could soon be in use by the British pork industry, enabling checks to be made on whether pork labelled as British actually originates from that country. Industry organization BPEX (British Pig Executive) is funding a £100,000 study that will use isotope technology to pinpoint the country of origin and, eventually, the specific farm.

The principle of the technique is that atoms of the same element can have different numbers of neutrons. These different versions of the same element, called isotopes, are used to trace the source of the product. The fingerprint for a range of elements found in the tissues is very specific to the source of nutrients and water consumed by a pig while growing, enabling investigators to accurately link a sample to the place where the pig was raised, according to the British magazine Pig World. Isotope analysis compares the fingerprints of samples, producing a graded result – the closer the locations where samples come from, the closer will be their isotopic fingerprint. Conversely, two samples from widely separated areas, such as the UK and Spain, will have very different signatures.

"The starting point will be to visit assured producers and take samples from pigs produced all over the United Kingdom to create a reference library. We will use slapmarks (tattoos) and postcodes to pin down geographic locations," says Mark Wilson, director of pig industry technology at BPEX. "Once we have this information, the aim would be to use the technology for verification and it might eventually replace elements of the British Quality Assured Pork paper trail audit with state of the art technology."

By proving the provenance of meat samples, the integrity of the Quality

Standard Mark, which is used to identify assured British pork to consumers, will be protected. "We intend to take packs of pork, bacon and ham from the retail shelf as part of the audit process and test their isotope profiles against the reference dataset," says Mark Wilson.

Trials have demonstrated the validity of stable isotope analysis as an authenticating method for pork and pork products. The technology is used extensively in Germany to authenticate a wide range of agricultural products including meat, organic eggs, wine, fruits, vegetables and edible oils.

The project will add value to the Quality Standard Mark and protect it so retailers and consumers can be assured of provenance. It should also mean the end to imported pork masquerading as British through misleading labelling, a problem against which the industry has battled against for years. "This could be a very powerful tool in our bid to get accurate labelling on pork and pork products'" concludes Mark Wilson.

UK pig farmers warned about dangerous squeals

UK farmers have been advised to wear earmuffs when feeding pigs - to protect them from "dangerous" squealing. A UK Health and Safety Executive leaflet has been issued advising farmers that pigs' squealing could cause just as much damage to hearing as a chainsaw or power drill.

The leaflet says that pigs can become extremely noisy just before they are fed and that farmers should either wear earmuffs or go nowhere near them while they are feeding.

Entitled *Farmwise - An Essential Guide to Health and Safety in Farming* - it warns: "Large numbers of pigs in a building can create noise levels of 100 decibels or above, especially at feeding time."

Under English law, employers have to ensure their workers are protected from noise levels once they reach 80 decibels, equivalent to the noise inside a tractor cab. More than one in five farm workers are being exposed to deafening levels, according to the HSE.

Tiny super-plant can clean up hog farms and produce ethanol

Researchers at North Carolina State University have found that a tiny aquatic plant can be used to clean up animal waste at industrial hog farms and potentially be part of the answer for the global energy crisis. Their research shows that growing duckweed on hog wastewater can produce five to six times more starch per acre than corn, according to researcher Dr. Jay Cheng. This means that ethanol production using duckweed could be "faster and cheaper than from corn," says fellow researcher Dr. Anne-Marie Stomp.

"We can kill two birds - biofuel production and wastewater treatment - with one stone: duckweed," Cheng says. Starch from duckweed can be readily converted into ethanol using the same facilities currently used for corn, Cheng adds.

Corn is currently the primary crop used for ethanol production in the United States. However, its use has come under fire in recent years because of concerns about the amount of energy used to grow corn and commodity price disruptions resulting from competition for corn between ethanol manufacturers and the food and feed industries. Duckweed presents an attractive, non-food alternative that has the potential to produce significantly more ethanol feedstock per acre than corn, exploit existing corn-based ethanol production processes for faster scale-up and turn pollutants into a fuel production system, say the researchers. The duckweed system consists of shallow ponds that can be built on land unsuitable for conventional crops, and is so efficient it generates water clean enough for re-use. The technology can utilize any nutrient-rich wastewater, from livestock production to municipal wastewater.

Duckweed utilizes the nutrients in the wastewater for growth, thus capturing these nutrients and preventing their release into the environment. In other words, Cheng says, "Duckweed could be an environmentally friendly, economically viable feedstock for ethanol."

Cheng and Stomp are currently establishing a pilot-scale project to further investigate the best way to establish a large-scale system for growing duckweed on animal wastewater, and then harvesting and drying the duckweed.

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Opportunities for organic pork production

Research results from the Organic Trade Association show sales of United States organic products, including pork, grew more than 17% from 2007 to 2008, and the consumer demand is expected to continue despite the current economic downturn. Iowa State University (ISU) animal science professor Mark Honeyman says that some pork producers could consider a change to that type of production to meet the increased demand for organic pork products.

"Many US consumers of pork are interested in issues concerning the environment, food safety, pig welfare and pig farm ownership and structure," Honeyman says. "These consumers may be willing to pay more for pork from farmers who also are concerned about these issues."

Consumers typically pay more for organic pork, primarily because it costs more to produce. This increased price tag is at least partially due to lower feed efficiency and higher feed costs in organic production, Honeyman says. As of early May, the price of organic corn is around $8 per bushel, compared with the price of traditional corn at around $3.50 per bushel.

However, the change to organic production is not without its liabilities, says ISU agricultural economics professor James Kliebenstein. He notes that some production factors can negatively affect an organic producer's financial bottom line. "The pigs per litter and litters per sow per year figures are lower, and along with a generally lower productivity, this adds to the cost of organic pork production," he says.

Producers who are considering going to organic production need to objectively and accurately assess their own situation and operation, and evaluate both potential advantages and risks, says Kliebenstein.

"Organic pork production is more variable and less predictable and there are not as many tools to keep costs low," Honeyman says. "In conventional pork, we've worked many years to keep costs low. This variability in production creates problems on the marketing side. Consumers desire a consistent quantity of fresh product."

Honeyman said producers who want to take a serious look at switching to an organic system should consider several factors. For example, do they have a reliable source of organic feedstuffs? Is there an available and steady market for their products? Because no antibiotics are allowed, pig health can be a financial concern, as can the costs associated with organic certification and its regulations, he points out.

Producers who want to make a change in their operation, yet can't financially justify moving to an organic system might want to consider the niche segment of "natural pork." This system allows the use of traditional feeds and de-wormers, and allows for a less drastic operational change. Natural pork has a more established market and can provide producers with a more readily available market that experiences fewer market fluctuations, Honeyman suggests.

Denmark plans for green growth in agriculture

The Danish government has recently launched a DKr 13.5 billion ($2.8 Bn) Green Growth plan that will allow agriculture to develop, while enhancing the environment.

"The central aspect of the Green Growth plan is that it combines agriculture, the environment and nature in one policy," says Food Minister Eva Kjer Hansen. "Economic growth, nature and the environment presuppose each other - they are not in conflict with each other."

The plan stipulates that 40 per cent of farm animal manure must be used for green energy by 2020 and that, in time, all farm animal manure must be used as a source of energy. Initiatives to reach targets include a fund for starting investments in biogas and a biogas team to co-ordinate biogas activities around the country.

"With the Green Growth plan's aim of turning agriculture into a supplier of manure for green energy we will be getting a positive effect from manure," says Eva Kjer Hansen. "We will see growth, because the farmer's liquid manure will be turned into energy, and at the same time the degassed liquid manure means a reduced seepage of nutrients and lower evaporation of methane - both benefiting the climate and the environment."

The plan is also aimed at ensuring that organic farming continues to develop healthily in Denmark, says the government. "We are now making it possible to double the area used for organic production through a massive effort amounting to almost DKr 350 million ($74 million) a year," says Eva Kjer Hansen. "This will result in a greater Danish organic production of apples, carrots, milk and salami, to name a few products. And it will benefit consumers, exports, the environment, nature and animal welfare."

The Green Growth plan also aims at modernising and liberalising the Danish farming legislation and giving farmers better opportunities for growth, as well as making it easier for them to raise capital. "We will remove both the current limit on the number of animals on a farm and the requirement that a farmer must have a certain amount of land for the number of animals on his farm," says Eva Kjer Hansen. "A competitive agricultural sector needs free reins to take advantage of the benefits of large-scale operations and better opportunities for raising capital. This is something Danish agriculture must have."

HSUS steps up pressure on sows stalls

The Humane Society of the United States (HSUS) continues its state-by-state attack on confinement systems for livestock, following its success in getting legislation to ban such systems introduced in California, Florida, Arizona and Oregon. The livestock industry in Colorado agreed to phase in changes to production systems in order to avoid similar legislation. Now, HSUS has scored another success in Maine, where gestation crates for sows and crates for veal calves will be prohibited from January 2011.

A statement from the HSUS reports that Maine Governor, John Baldacci, has signed landmark legislation preventing these two confinement methods. The bill was sponsored by Senator John Nutting, Senate Chair of the Agriculture, Conservation and Forestry Committee. It passed the committee and both chambers unanimously.

It appears that Ohio will be next to pass similar legislation unless producer groups can lobby effectively. The Ohio Farm Bureau Federation is ramping up its fundraising efforts in order to take on HSUS over the size of cages, crates and stalls used to house farm animals. HSUS has met with Ohio cattlemen, pork producers and the poultry industry, telling participants in those industries to change their farming practices or face a ballot initiative.

The Humane Society is the USA's largest animal rights organization with more than 11 million members.

EU approves boar taint vaccine

Pfizer Animal Health announced in May that The European Commission has given Pfizer the go-ahead to market its new boar taint vaccine, Improvac®, across the EU.

Improvac®, now approved in 52 countries around the world, provides a reliable reduction of boar taint in male pigs while improving the profitability and sustainability of pig production as well as the welfare of pigs, says the company. It represents an efficient and animal friendly alternative to physical castration;

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proven to make no compromise on meat quality. With a zero day withholding period, Improvac® fully answers consumers demand for safety, taste and animal welfare.

Improvac® reduces reliably the levels of androstenone and indirectly skatole - the two major boar taint compounds - to below sensory thresholds.

The male pig is given two doses of the vaccine: the first dose "primes" the immune system but has little effect on the physiology of the pig; the second dose causes a significant and transitory antibody response, inducing the reduction of the concentration of the boar taint compounds and suppressing the boar-like undesirable behaviours. Improvac® was demonstrated to be at least as efficacious as physical castration in reducing boar taint, including on large commercial scale production units.

The first 2ml dose can be given from 8 weeks of age, and the second dose 4 to 6 weeks before slaughter (and at least 4 weeks after the first dose).

Pleurisy costs UK pig producers $4 per pig

Recently published research commissioned by the British Pig Executive (BPEX) suggests that pleurisy is a massive problem for both pig producers and processors, costing up to £2.26 ($4.07) per pig.

Dr Dan Tucker, a senior lecturer in veterinary public health and pig medicine at the Cambridge Veterinary School who headed the investigations into pig pleurisy, said his team found 78% of all batches of UK pigs showed some indication of pleurisy, with 10% of those showing pleurisy running at more than 20%.

The researchers followed 80 batches of pigs through to slaughter and monitored environment, performance and management techniques. They found the disease reduced growth rates and led to lower carcass weights, as well as increased ages at slaughter with additional feed costs.

The total economic impact was calculated at £2.26/pig, not including veterinary costs, assuming a prevalence of 10%.

Further economic damage was also revealed during the processing stage, due to an increase in inspections, extra trimming, a reduction in line speed and associated staff costs.

Dr Tucker said: "People have known about pleurisy for a long time, but now we have firm statistical evidence showing the extent of this disease and revealing the considerable economic damage it causes."

Studying historical data of 120 pig herds with a history of either a high prevalence of pleurisy (above 10% over the past two years), or a low incidence of pleurisy (less than 5% over the past two years), as well as problems caused by the disease at abattoirs, his team was able to identify a series of risk factors that led to a high incidence of the disease.

These included failure, or inability to implement strict all-in all-out management at unit, or building level, repeated mixing of pigs after weaning and repeated moving of pigs, even when they were not mixed

In addition, units with farrow-to-finish production systems had a higher incidence of pleurisy than ones with off-site rearing. Incidence was further reduced by operating wean-to-finish systems.

"We put these batches under the microscope and found significant differences between the two groups, which enabled us to identify some simple practices producers could follow to reduce the incidence of pleurisy." said Dr Tucker.

These included:

- Cleaning and disinfecting finisher accommodation thoroughly between batches
- Extending the downtime for grower and finisher accommodation between batches to at least four days and ideally eight days
- Minimizing the mixing and moving of pigs as much as possible, particularly during the growing period

Irish industry faces challenges

Following a food scare caused by dioxin contaminated pork last year, the Irish pork industry is facing two further food safety and traceability issues. A government report on the dioxin contamination of Irish pork that occurred last December has found that the existing pig meat traceability system is not working and recommends that an improved method should be vigorously pursued.

The report found that an effective traceability scheme would have prevented all pork being recalled and urged the processors to set up a pilot program to give full traceability at factory level. It called for the setting-up of a single agency for food as well as animal feed. It also says that a full traceability of batches at slaughter should be introduced.

Failure to have an effective traceability regime means the Irish taxpayer may end up paying financial aid to processors for non-Irish pork, the report says.

Less than 10% of pork products were potentially affected by the contaminated feed. However, because of the absence of a forensic traceability regime 100% of products had to be recalled.

The Irish pork industry is also under pressure because the level of Salmonella contamination in carcasses is the highest in the EU, with 20% of carcasses contaminated, compared with an EU average of 8.3%. Although EU studies have shown that more than half of the cases of Salmonella in humans are acquired from overseas travel or from imported food products, Salmonella infections in humans are a cause for concern.

The Irish Department of Agriculture is to launch a new Salmonella scheme in a bid to tackle the problem. From 2012, a national plan will be required for the control and reduction of disease by all EU member states.

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Creep feeding - latest thoughts on presentation

By John Gadd

Last month I discussed progress in creep feed design, its perceived high cost/tonne and its encouraging payback – especially by the time pigs are market weight. But investment in these sophisticated diets can be wasted if they are not offered properly.

Does creep feeding pay?

There is now plenty of good statistically-valid evidence, for example provided by English (1999); Varley (2006); Mavromichalis (2008) that properly designed, manufactured and presented creep feeds are worthwhile. These and other data reveal that, at 5 weeks of age and compared to sow's milk alone, piglets can be 1.5 to 1.8 kg heavier, delivering a net margin benefit of £1.20/weaner (C$2.04) on UK prices today. But few of us sell weaners, and these same pigs can reach slaughter 3 days sooner, improving net margin from food saved alone by 15% - to which we can probably add another 3% from lower overheads (Extrapolated from BPEX 2009).

Does it always pay? Even if the right creep feed is well-presented?

Not necessarily.

1. It can depend on weaning age. I have found that litters weaned at under 21 days may not recoup the extra investment. They might not eat enough to make a measurable difference. Some do but quite a lot might not.
2. The milkiness of the sow. A milky sow fed and watered properly in lactation should be capable of rearing a litter to around 55kg bodyweight herself. Beyond that she may struggle to do so, especially if she is small or a first-litter sow. A creep feed is essential so as not to lose litter momentum and take the pressure off her.
3. Variation in creep feed uptake between litters. Behavioural scientists are puzzled by this common phenomenon, and my experience of some 45 years of closely observing how piglets copy each other suggests that the measures I outline below can reduce the variation considerably as well as getting them started sooner to secure the vital accumulated total of 400g creep eaten/piglet before weaning, which makes the transition to solid food after weaning so much easier.

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When is creep feeding most likely to pay?

1. When the creep feed is of sophisticated design (see last month's article) and made carefully, stored carefully and fed fresh.
2. When a litter is large and growing fast.
3. When milk yield is borderline for the litter on the sow.
4. When there is ample, accessible fresh water in clean dispensers.
5. When the troughs are kept really clean.
6. When enough TIME is devoted to creep feeding.

So how much time?

It varies, but several studies (Dr.Saluan, Dr. English and my own observations of clients records) suggest that, on average, around 57% of labour is spent on the breeding aspect of all farrow-to-finish farms. Of this, 22 % is devoted to farrowing-to-weaning and maybe a tenth of that on creep feeding, ie 2% of the breeding stockpersons time. This is about 1 minute/litter/day – not nearly enough. This suggests thrice-daily supervision is not being done, and if it is, it is not carried out diligently enough and done in a hurry. From timing attendants who were doing the creep feeding replenishment job well, it was taking 2 hours/day per 50 litters - approaching 4 times as much as estimated in the surveys.

How much should be eaten?

Table 1 will surprise you as to what is achievable. The nutritionists tell me that a piglet should have eaten about 400g of palatable food before the sow is removed so as to help condition the gut to avoid more than a 3-day post-weaning check to growth - less check than that on a really good creep feed. Using the 400g as a threshold, look at the 'typical' column and you will see a major reason why there is a move to 28-32 day weaning in Europe these days, despite the added cost. Achieving the target intakes will support the seemingly 'pie-in-the-sky' weights-for-age target in Table 2 - a comment which I can get when I show both tables at meetings.

Table 1: Target and typical (cumulative) creep feed consumption

Weaning age (days)	Creep feed intake (g/pig).	
	Target	Typical
24	350	200
28	700	400
32	1200	800
35	2500	1500

Source: BPEX, 2009.

Table 2: Target growth rates

Age in days	(weeks)	Liveweight (kg).
28	4	8
35	5	10
42	6	12
49	7	14
56	8	17

Source: BPEX, 2009.

And how clean should the receptacles be?

Spotless! That is why 3 times a day examination and creep replacement is advisable. Tiny pigs are just as messy eaters as tiny humans - and look how careful we are with sterilizing our toddler's bottles and washing their food plates!

"3 times a day. Put out enough for 3 hours*. Done for 3 weeks"*

*During the working day.

**Some experts say a week to10 days on this rigorous schedule is sufficient, and I won`t argue – but you get the message?

One manufacturer's idea of having a spare detachable mini-trough to start creep feeding off was a good one, I've found, as it encouraged replacement with a clean one while the other was taken away to be sanitized.

When to start creep feeding

The pundits say 10-14 days old, advice which was surely based on the older, much less digestible creep feeds which tended not to be eaten in noticeable amounts until they got stale and could cause looseness or worse. Today things are different as the feeds are so much more gut-friendly if offered little and often and the containers kept 'sweet'. Yes, initially they will waste quite a bit of an expensive feed, so feed it to the sow – do not let it stay there losing its 'nose' and 'festering' (all those old farming terms I was brought up on are as true today as they ever were!).

Use a sprinkling of those lovely tiny 'pencil lead' type pellets (a well-made creep pellet should be just crushable with some effort between fore-finger and thumb) on a shallow tray to start with – as early as you feel suits your conditions (4 to 7 days?). These trays need to be kept as clean as you can, hence the 3-hourly attention. Then transfer the pellets (not meal as it can bung up the mouth) to a conventional heavy stand-alone iron bowl or dish fixed to the floor. Once they are really tucking in, transfer to a conventional creep hopper. A tip is to put the creep tray in for the first time when the sow is eating, as even at a very early age piglets are both curious, aware and tend to copy their mother.

Where to put the feed containers

Lots and lots of opinions (and trials on different positions) mostly due to the four main farrowing pen layouts we use, but there are some basic rules:

- Never under or too near to a heat source.
- As near as possible to where the piglets rest. In the covered creep areas? Not for me – it is too hot.
- Not near the wet/dunging part of the pen and well clear of the sow's urine splashings.
- The container should be reasonably well-lit. 100 lux is enough. Light intensity can be easily measured with a redundant light meter – a very useful piece of kit in a dark winter as in Canadian latitudes, especially for sows and gilts being bred.
- Clean fresh water must be available next to the container, between it and if possible on the edge of the dunging area. These new creep feeds (and, not generally realized, sows milk too) are thirst-making, so a good source of water is vital to encourage early uptake. The Japanese have a superb little stainless steel mini-leaf drinker which keeps the water supply pristine clean.

Summary - back to time and money again

These two articles on the latest advice on successful creep feeding should have convinced you (I hope!) to spend enough money on the latest feeds made by a specialist manufacturer and to devote enough time to doing a professional job in feeding them. Both need attention, and a few need refinement, on every farm I visit. ≡WHJ≡

Producers flock to the largest livestock show in the world

By Stuart Lumb

EuroTier is the biggest and arguably the best livestock show in the world, held every two years in November, in Hanover, Germany. Certainly the exhibition centre is huge, with the site being serviced by two separate tram lines from the city centre and buses laid on to take visitors to the different halls. The event was attended by 130,000 visitors, many from overseas, which was highly encouraging given the state of the world economy. Farms everywhere are getting larger and the number of farmers is declining. Consequently a single farmer has much greater buying power than say 10 years ago and so using visitor numbers as a major barometer of show success is not as important as it used to be. The majority of visitors were of course German, as the country has a massive pig industry, which has seen a decline of late, plus units are understandably getting bigger. The Danes are shipping vast numbers of weaner pigs to Germany for finishing, which is obviously not good news for the Danish slaughterhouses.

A series of conferences and meetings covering all species took place mainly during the evenings plus smaller specialist seminars were held during the day as well, so visitors could get technically updated apart from just seeing new commercial developments. As well as livestock, one hall was devoted to aquaculture and over 200 bio-energy companies were also exhibiting.

As usual EuroTier had a wide range of new products gaining medals. Technology is being widely adopted in agriculture as labour is getting scarce and expensive. Austrian Company Schauer Agrotonic GmbH was awarded a gold medal for its Argus Welfare System. Loose housing for pregnant sows will be a legal requirement across the EU after 2012 and sows are already being kept in large groups rather than in sow stalls. Finding these sows can be very difficult and time consuming, which is where the Argus concept fits in. The concept is basically an electronic tracking system, so that sow movements and their position can be pinpointed. The system also flags up ill sows and those in oestrus and also shows feed intake patterns.

AI is the norm these days and keeping semen at the correct temperature is vital, to ensure that the sperm is viable. German company GFS Genosenschaft zur Foderung der Schweinehaltung E.G. was awarded a silver medal for their GFS-Temcheck system. Simple things are always the best. The Temcheck system is just that – a simple colour change indicates if the temperature of the sperm and diluent are not within a given range, which would affect the semen's viability.

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The MS Pigsleeper anaesthetizes pigs prior to castration

Flies in piggeries are a pest as they spread disease. They tend to lay their eggs in inaccessible places such as under the slats and spraying insecticide by hand requires a lot of diligence and effort to be effective. This is a task that suits automation and Menno Chemie-Vertrieb GmbH's silver medal winning automatic spray system does just that. The insecticide is mixed with compressed air which is forced through nozzles, as a mist, with the nozzles being located under the slats. Pyrethrum is used as the insecticide and this eventually degrades in the slurry.

MS Schippers sells a vast range of small pig equipment and sundries across Europe and they were exhibiting their piglet CO_2 / O_2 anaesthetizing equipment, MS Pigsleeper. There is a lot of concern about the castration of piglets in many countries due to the pain and stress it causes and welfarists ideally want castration banned but, if not, for the pig industry at least to use technology that reduces the pain the piglet suffers. "Three devices were trialled in Holland and the MS Pigsleeper came out top," commented Schippers' Erny Duis. "Our device costs USD$ 1450 and we have already sold 1300 sets. A 20-litre $C0_2$ cylinder will treat 1000 piglets, at 2-3 days of age. "Traffic lights" incorporated into the equipment switch from red to green when the piglet has received sufficient gas. Schippers train the Dutch pig farmers in the correct use of the equipment after which the farmer receives a competence certificate from the Dutch Pig Farmers Association. The Swiss are using a similar device but it uses the anaesthetic isoflurane, with a vet supervising the task.

Ensuring that the lactating sow is fed correctly is vitally important to minimize weight loss and to ensure that she milks well. This takes a great deal of skill. Sows often leave feed in the trough if excess feed is given. This feed then has to be scooped out of the trough and is then discarded, which is very wasteful. To cope with this problem the Mannebeck Artemis system has a probe in the trough which records if uneaten feed is accumulating. A feedback mechanism then cuts back the sow's feed. Water intake can also be measured automatically so that it's possible to check on any sows not drinking simply by checking a computer screen. Artemis also incorporates a hand held terminal which picks up data from a contact plate located at the side of the farrowing pen. Using the terminal, the technician can check the sow's feed and water intake whilst walking through the farrowing house.

Big Dutchman's HQ is in Germany and it was very appropriate that they should receive the "Innovation of the Year" award at a show in their homeland. MixPump is a compact liquid feeding system which does away with the need for a mixing tank, agitator or weighing system. It mixes liquid and dry fractions together by means of a two-stage proportioning pump after which the feed is pumped directly to the pigs.

Big Dutchman's MixPump is a compact liquid feeding system which does away with the need for a mixing tank, agitator or weighing system.

EuroTier also hosted the first China – European pig summit. A large delegation of Chinese businessmen and pig specialists had travelled to Hanover to attend the show and take part in the summit. Pork is of course the major meat eaten in China and so her pig industry is of great national importance. According to Mr Zhang Baowen, President of the Chinese Animal Agriculture Association, 66% of China's pig farms sold from just 50 to 500 pigs in 2006. At the other end of the spectrum six integrators sold 4.4 million pigs. Diseases are a problem with PRRS causing a reduction in pig slaughterings in 2006/7. Consequently the government has implemented compulsory vaccination programs, which are now working and pig numbers are increasing. Production techniques common in Europe and the USA have been implemented in China, according to Prof. Wang Aigo, of the China Agricultural University. Multi-site production is common, along with 3 week weaning. Most slaughter pigs contain 50% Duroc blood, along with some Yorkshire and Landrace. Many well known American, Canadian and European breeding companies have set up joint ventures over the last 3-4 years to improve the quantity and quality of pigs produced in China.

Certainly if you had to choose which big show to visit for updating, EuroTier has to be at the top of the list, plus German beer is pretty good too – and of course the sausages to go with it!

≡WHJ≡

Toxic shocks that poison profitability

Mycotoxins are becoming a key issue for pig producers. These toxic substances affect animals in a variety of ways, can be difficult to diagnose and identify and their negative effect on health and productivity has only been recognized in recent years. In the UK, managing mycotoxins is becoming a challenge and tackling them has become an important part of the management regime for producers, writes UK pig industry journalist Jane Jordan.

The continuing trend of warm damp weather here in the UK is forcing pig producers to tackle mycotoxin contamination head on. With harvest yields down and grain coming to store with a high moisture content (in excess of 14 per cent in most cases for the past two summers), the inevitable problems of mouldy feed and deterioration have become commonplace. Also, EU legislation means that arable farmers here are using less fungicide sprays and varieties of cereals that are not so resistant to infections, so mycotoxins can be produced pre-harvest and during crop growth. Another factor is the increased global trading of grain, which can make traceability and quality assurance more difficult. As a result, the potential risk of purchasing contaminated cereals can increase. Global climate change will also have an impact as the increasing incidence of drought, flooding, and temperature extremes at harvest will create more opportunity for moulds to develop and thrive. UK livestock producers are learning that, to some extent, the problem is unavoidable and here to stay.

Natural problem

Mycotoxins are natural and produced by all types of moulds as either defence mechanisms to protect the organism, and/or to help colonisation within their host. "Moulds occur throughout our environment, and therefore so do mycotoxins - there are literally hundreds of them. They also cause diseases in the grain such as aspergillosis and damage the grains resulting in nutrient loss," explains Dr Jules Taylor-Pickard, nutritionist and solutions deployment team leader with Alltech Europe.

Pigs are particularly sensitive to mycotoxins, although youngsters and breeding animals are generally the most susceptible. The degree to which animals are affected is largely due to the kind of mycotoxin involved, its concentration level in the feed and also the age and production stage of the pig. Combinations of certain mycotoxins can produce elevated negative effects on performance - way above that normally expected for individual mycotoxin levels. "It seems that higher performing animals tend to be more susceptible to the effects of mycotoxins. A declining health status and the increased incidence of endemic disease problems and complex diseases, such as PMWS has not helped either," she adds.

Some key symptoms of mycotoxicosis in pigs may include:

- Reduced feed intake
- Reduced growth rate
- Increased age at puberty of gilts or boars
- Reduced libido
- Poor semen quality and a low sperm concentration
- Reduced fertilization and unexplained levels of infertility in sows and boars
- Reduced numbers born and milking ability
- Abortion and an increased rate of foetal re-absorption
- Sudden deaths
- Higher incidence of liver and/or kidney damage
- Poor immunity and a higher incidence of disease
- Inconsistency of animal body condition
- Pale pigs
- Vomiting
- Rectal or vaginal prolapse
- Weak pigs
- Bloody faeces
- Erysipelas

On the rise

Speaking at a recent producer workshop, held by Alltech at its UK headquarters, Professor Trevor K Smith, from the University of Guelph said research consistently proves that mycotoxin levels in feed grains are increasing. DON tests carried out on Canadian wheat and corn showed a 35 to 36 per cent level of mycotoxin contamination. The findings suggest that the potential risk of mycotoxicosis in intensive livestock production is also increasing considerably.

Mycotoxins from mould on cereals is becoming an increasing problem for pork producers around the globe (photo courtesy Alltech)

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Studies carried out at Guelph with breeding sows show that feeding a mycotoxin-contaminated diet can significantly reduce reproductive performance. The trial monitored sows for 42 days covering the period of late gestation and lactation. They were given a contaminated diet for 21 days before farrowing and also for 21 days after the piglets were born. The feed included the strains of mycotoxins commonly found in commercial cereal-based pig feeds, and included Fusaric acid and Zearalenone. Feed consumption, growth, milk composition, litter performance, blood chemistry and the rebreeding interval (weaning to oestrus) were recorded.

The study found that those sows fed a contaminated diet had significantly lower feed intakes than those given a control diet - a 1kg difference - and therefore exhibited a lower weight gain over the trial period. These sows also had double the number of stillbirths and produced 0.5 piglets less per litter overall than their control fed counterparts. The weaning to oestrus interval for those exposed to in feed mycotoxins was also higher at more than eight days longer.

Getting control

There are ways to significantly reduce the risk of mycotoxin contamination, such as ensuring feedstuffs are stored in clean, dry bins and/or barns, and are protected from rodents and vermin. Any affected feed or grain suspected of contamination should be discarded. If appropriate, processing the feedstuffs by cleaning or heat-treating can reduce the risk as can the use of mould inhibitors such as propionic acids and enzymes. Many producers are also choosing to reduce the dietary risk by including supplements that can control a broad-spectrum of mycotoxin activity.

Specialty additives, such as adsorbents or binding agents can 'chemically trap' mycotoxins and prevent them from being absorbed by the pig.

There are two types of mycotoxin adsorbent/binder:

- Inorganic binders
- Organic adsorbents

The inorganic binders include: zeolites, bentonites, bleaching clays from the refining of canola oil, hydrated sodium calcium aluminosilicates (HSCAS), diatomaceous earth and numerous clays. These materials are often inexpensive and easy to handle and are traditionally mixed into the feed. They either adsorb specific mycotoxins and/or bind minerals and vitamins. However, they may cause complications due to the high inclusion rates required, and they can present disposal problems when as they are non-biodegradable.

Organic adsorbents include fibrous plant sources such as: oat hulls, wheat bran, alfalfa fibre, and extracts of yeast cell wall, cellulose, hemi-cellulose and pectin. These materials are biodegradable but can, in some cases, be a source of mycotoxin contamination. A key benefit of yeast cell wall adsorbents, such as Alltech's Mycosorb, are the low inclusion levels. These compounds have a high surface area that allows for the adsorption of a large number of mycotoxins and no toxic contaminants. Also, the efficacy of these glucomannan-containing yeast adsorbents is proven through numerous research studies and commercial trials worldwide, in varying situations.

Bedded bugbear

But it's not only feed grains that are causing UK pig units problems. Farms using semi-intensive, straw-based production systems are finding mycotoxins in the bedding equally troublesome. Although this type of production system fits the UK retailer and consumer welfare driven ethos, pigs housed on straw do show an increased incidence of mycotoxicosis-related problems. Those reared on slats tend to have fewer problems. Straw consumption in bedded systems is considerable. Estimates suggest it is between 10 and 15 per cent of total feed intake in weaned pigs, and even higher in sows. If the straw is contaminated, then the herd will have an increased risk of mycotoxin ingestion.

A recent Australian study showed that more than 80 per cent of straw samples were positive for mycotoxins. However, adding a mycotoxin-sequestering agent to the diet of pigs kept on straw did improve growth rates (Moore, 2005). In the UK, semi-intensive animal housing has increased - particularly in the grain-belts of Eastern England. "A fair number of straw-based systems have struggled with musty straw because of our recent wet harvests. Straw quality has been poor," says Graham Baker of GE Baker, a UK company that supplies equipment and number of feed additives and supplements. A number of its customers report lower growth performance and reduced fertility without any apparent disease problems - key indications of mycotoxicosis. Many believe the source of the problem is in the straw bedding, rather than the feed.

Some QE customers are using Sorbatox, a natural, mineral feed additive from KiotechAgil, to control the problem. The compound binds mycotoxins from contaminated raw materials and feed, thus protecting feed quality. Adding the mineral at a rate of 1kg per tonne of feed has proved successful and returned productivity to former levels on a number of farms. Reducing the rate to a lower maintenance level also seems to keep the problem in check, long term, says GE Baker.

Reference: Moore, D.D. (2005): Mycotoxins in straw used in deep-litter pig housing. Manipulating Pig Production X. Proceedings of the Tenth Biennial Conference of the Australian Pig Swine Association (APSA). Edited by J.E. Paterson; p 251. APSA, Werribee, Australia.

Flu scare hammers prices and reduces confidence

By John Riley, IAS Management Services

The last three weeks of May saw pig meat prices fall as a result of the media frenzy over the virus A/H1N1. Despite the best efforts of the industry's producer body, Australian Pork (APL), the media continue to refer to the virus as Swine Flu. At the time of writing, 140 people out of a total Australian population of over 20 million people have contracted the A/H1N1 virus. The daily reference to the virus on television and in the press, about schools being closed, people being quarantined and luxury cruise liners being refused permission to dock has resulted in the price received for a 75 kilogram carcase falling by 40 cents per kilogram. The APL claims that after an initial public reaction and a slight dip in pork sales, the consumption of pork has not been adversely affected, but nevertheless market returns have taken a significant knock.

Fortunately the price of sorghum, wheat and barley is at a level which is enabling producers to operate at a cost of production of around $2.50 (CAD 2.19) per kilogram carcass weight. However the costs of protein sources are increasing with blood meal at $1,300 per tonne and the cost of other sources including soybean meal are moving upwards. The pessimists in the industry are already forecasting doom and gloom.

The media hype associated with the A/H1N1 virus has certainly had an impact on the confidence of producers in the future of an industry that is punch drunk by three years of no profit and a reduction in the size of the national herd. Since Christmas many producers had been considering capital investment in upgrading their facilities but the reaction to the drop in market returns in the last three weeks has resulted in a rethink by the producers and even more worrying is the reluctance of financial institutions to support loan applications for capital works.

Recent influenza flare ups were referred to as Asian flu and Avian flu, so why could not the A/H1N1 alarm be referred to as either Mexican flu or Porcine flu?

The confidence of Australian producers is also undermined by the continued increase in imports and a reduction in exports. Latest APL data showed that the volume of imports on a moving annual total has increased by 25% but in the same period the volume of imports from Canada has fallen by 3.3%.

The bad news for the Australian producer is that in March 2009 the volume of imports showed an increase of 104% compared with imports in March 2008. Canadian imports in March 2009 totalled 3,975 tonnes shipped weight and compared with March 2008 represented 92% by volume and a 18% increase in value to $3.67 per kilogram.

Table 1: Overview trends for Domestic, Export and Import trade

Domestic			Exports		Imports	
Month	Slaughter ('000)	Pigmeat (Tonnes)	Volume Tonnes SW	Value $AUD (Million)	Volume Tonnes SW	Value $AUD (Million)
MAT Mar-09	4,646.0	333,073	41,257	140.2	127,563	492.7
MAT Mar-08	5,293.1	384,103	45,876	145.6	102,028	383.9
% Change	-12.2%	-13.3%	-10.1%	-3.7%	25.0%	28.3%
Mar-09	373.1	27,095	3,197	12.4	14,044	58.6
Mar-08	435.4	31,222	3,198	10.1	6,885	23.5
% Change	-14.3%	-13.2%	-0.02%	22.7%	104.0%	149.1%

Climate change and green house gas emission are attracting significant government funding at both the State and Federal government levels. The Federal government late last year announced an investment of $180 million in the Nations Farming Future including $26.5 million for individuals and groups to update their knowledge and insulate their businesses against the effects of climate change. The first group awards announced recently included grants to a wide range of industry sectors including grains, cherries, dairy, abalone and macadamia nut producers. Most grants were to industry bodies representing the sectors but a group of eight family businesses producing pork in Queensland were also successful. The group, facilitated by IAS Management Services, was awarded $202,000 dollars to improve the efficiency of feed, energy and water use in their business above industry standards.

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Published industry performance results are limited in Australia but the performance data for a sample of herds published by the Pork CRC for 2007-2008 indicated a herd dead weight FCR of 3.93:1 at an average feed cost of $1.67 per kilogram for a 71.7 kilogram carcass. The average number of pigs weaned in the herds in the sample was 21.2 with 1,428 kilograms of pig meat sold per sow per annum.

The impact of legislation continues and producers are now faced with increased compliance costs as a result of the Environmental Protection Agency demanding full cost recovery for implementation of the legislation. However, a recently completed research program funded by APL will result in cost savings for producers planning to install new treatment pond systems.

Until recently in Queensland the legislators insisted that producers installed large volume anaerobic treatment ponds. The design of the ponds was based on the research of Barthe in the USA and his Rational Design Standards for Anaerobic Livestock lagoons (Proceedings of the 5th International Symposium on Livestock Wastes, 1985). The design criteria demanded about 6 cubic metres of pond capacity for each "standard pig unit" depending on climate and frequency of de-sludging. A standard pig unit is defined as one growing pig between 24 and 55 kgs live weight. A 500 sow farrow to finish unit would total about 5,000 SPUs, dictating a pond of around 30,000 cubic metres. The large ponds were costly to construct and difficult to clean out. The acceptance by the regulators of the merit of high loading ponds will reduce pond capacity required to 3,000 cubic metres for a 500 sow farrow to finish production unit with significant savings in construction costs. In addition the ponds will be more easily de-sludged.

The Queensland Primary Industries and Fisheries research group headed by Alan Skerman also found that the odour emissions from the high loading pond was lower than that measured from an anaerobic pond designed according to the Rational Design Standard.

Measuring odour using an olfactometer (photo courtesy QPIF)

To meet the new welfare codes, the APL is working with producers to develop a competency based training course for key staff. The codes state that the care of animals must be under the control of a competent stockperson. To date experience has been accepted as a basis of competency, however in the future the competency might need to be endorsed by a certificate of competency following an approved and nationally recognized training course.

For readers wishing to get away from the Canadian winter a visit to Cairns for the Australasian Pig Science Association meeting being held from November 22nd to 25th might be the ideal time for a visit to Australia. The program will include a range of papers by keynote speakers and leading scientists. With a wonderful climate and its proximity to the Great Barrier Reef and Ayres Rock, Cairns is an ideal base for a wonderful Australian experience. ≡WHJ≡

Citrus Grilled Country Style Ribs

By Roy Kruse and Justin Chatlain, Alberta Pork

Yield: serves 4 ❖ Cooking time: 1 hour 15 minutes ❖ Preparation Time: 10 minutes

Ingredients

1 piece		Canadian Pork country style rib, about 2½ lbs/1.25 kg
½ cup	(60 mL)	red wine vinegar
½ cup	(60 mL)	brown sugar
½ cup	(60 mL)	frozen lemonade concentrate, thawed
3 Tbsp	(45 mL)	tomato paste
2 Tbsp	(30 mL)	molasses
1 tsp	(5 mL)	ground black pepper
½ tsp	(2 mL)	ground cumin

Cooking Instructions

Combine all ingredients (except the pork) in a medium bowl; reserve a half cup (125 mL) of marinade. Place ribs in a glass or ceramic baking dish and pour remaining marinade over. Turn a couple of times to coat. Cover and refrigerate for 4 hours to overnight.

Pre-heat grill to medium low. Remove ribs from marinade, discarding marinade and wipe dry with a paper towel. Grill for a total of an hour and fifteen minutes. Baste frequently with reserved marinade for the final 20 minutes, turning every 5 minutes or so until ribs are tender and the internal temperature has reached 160˚F (71˚C). Anything that has sugar in the basting sauce, like this one, is very easy to burn. Grill over a low heat, turn frequently, and pay careful attention.

Allow ribs to rest for 15 minutes, covered, then slice between bones and serve with grilled seasonal vegetables.

Nutritional information

Citrus Grilled Country Style Ribs *(1/4 of recipe)* • *Per 1 person serving*

Calories	556	Cholesterol	182 mg
Fat	33.5g	Sodium	209 mg
Saturated	8 g	Carbohydrate	28.5 g
Monounsaturated	10.6 g	Fibre	0.6 g
Polyunsaturated	2.6 g	Protein	55 g

For more pork recipes, go to putporkonyourfork.com or porkfits.com

• Events Diary

August

13th	**George A Young Swine Health and Management Conference**	Nebraska, USA	www.georgeyoungswineconference.unl.edu
24-27th	**60th Annual Meeting for the European Association of Animal Production**	Barcelona, Spain	www.eaap2009.com Contact: +34 91396 34 51

September

9-10th	**Nottingham Feed Conference**	Nottingham, UK	www.nottingham.ac.uk/feedconf
15-18th	**SPACE 20009 Animal Production Show**	Rennes, France	www.space.fr Contact: +223 482890
19-22nd	**Allan D Leman Swine Conference**	Minnesota, USA	www.cvm.umn.edu Contact: (800) 380-8636 or (612) 624-3434

October

19-21st	**VIV China**	Beijing, China	www.viv.net Contact: +31 30 295-2772

November

4th	**Red Deer Swine Technology Workshop**	Red Deer, Alberta	Contact: Bernie Peet (403) 782-3776
9-13th	**Alberta Pork Regional Meetings**	Alberta	www.albertapork.com Contact: Charlotte Shipp (780) 491-3525
22-25th	**Australasian Pig Science Association Meeting**	Cairns, Australia	www.apsa.asn.au Contact: +61 8 9368 3636
24-28th	**Agromek 2009**	Herning, Denmark	www.agromek.dk Contact: +45 8675-4545

December

9-10th	**Alberta Pork Annual General Meeting**	Edmonton, Alberta	www.albertapork.com Contact: Contact: Charlotte Shipp (780) 491-3525

2010

January

19-22nd	**Banff Pork Seminar**	Banff, Alberta	www.banffpork.ca Contact: (780) 492-3651
19-21st	**Manitoba Ag Days**	Brandon, Manitoba	Contact: +1 (2) 04 5716566

March

6-9th	**American Association of Swine Veterinarians 2010 Annual Meeting**	Omaha, Nebraska	www.aasv.org Contact: (515) 465-5255
17-18th	**Alberta Pork Congress**	Red Deer, Alberta	www.albertaporkcongress.com Contact: (403) 244-7821
31st-1st April	**London Swine Congress**	London, Ontario	www.londonswineconference.com Contact: Linda Dillon (519) 482 3333

May

11-12th	***British Pig & Poultry Fair***	Warwickshire, UK	www.pigandpoultryfair.org.uk Contact: Alice Bell (+44 (2476) 858-276

July

18-21st	**International Pig Veterinary Society Congress**	Vancouver, BC	www.ipvs2010.com Contact: +1 604 6889655 ext. 2

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

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- *Maximizing grow-finish margins*
- *Effective hygiene and biosecurity*
- *Managing weekly and monthly production numbers*

For further information, or to register, please contact Bernie Peet on (403) 782-3776 Or (403) 392-3104 or Email: bjpeet@telusplanet.net

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GENESUS

25+ AWARD WINNERS

CAMROSE
31.30

RIVERVIEW
30.20

WOODLAND
30.03

GRAND
30.01

EVERGREEN
30.00

FAIRHAVEN
29.61

NEW HAVEN SOUTH
28.90

MILTOWN
28.53

SUNCREST
28.45

LITTLE BOW
28.40

GADSBY NORTH
28.30

MILLERDALE WEST
28.14

BRENTWOOD WEST
28.10

NEW HAVEN NORTH
28.10

BLUEGRASS
27.80

PARKVIEW
27.80

HARTLAND
27.80

SUNDALE
27.73

WIKNER FARM
27.70

SEVILLE
27.67

ROSEDALE
27.60

LAKEVIEW
27.34

SHAMROCK
27.24

MIDWAY
27.21

BRENTWOOD EAST
27.20

WILLOW CREEK E.
27.16

CLEARWATER
27.15

HURON
27.13

SAGE CREEKS
27.10

HILLSIDE
27.01

MARTIN FARMS
26.90

GRASS RIVER
26.80

BERESFORD
26.79

SUNNYSITE
26.74

DECKER NORTH ACRES
26.74

RAINBOW
26.70

TWIN HILLS
26.60

TOBACCO CREEK
26.60

CYPRESS
26.50

SUNSET
26.44

SPRINGFIELD, MB
26.42

VALLEY CENTER
26.38

ELMSPRING
26.37

SHADY LANE
26.23

GADSBY SOUTH
26.20

BACON ACRES
26.20

WHITETAIL
26.10

ROYAL PORK
26.00

MILLERDALE EAST
25.99

BRANTWOOD
25.79

OAKLANE
25.60

OK
25.58

CLEARFIELD
25.48

SPRINGDALE
25.40

CLEARVIEW, MB
25.40

RUSTIC ACRES
25.34

OAK BLUFF
25.34

CLEARVIEW, AB
25.30

HANSEN HOG W.
25.20

WILLOW CREEK W.
25.17

LDL
25.10

EL TIGRE
25.10

ASHWOOD
25.10

FAIRHOLME
25.09

MULTIPORK
25.00

POPLAR POINT
25.00

The First Power In Genetics GENESUS
26.96
AVERAGE TOP 25+ HERD

PigCHAMP
22.16
US PIGCHAMP P/S/Y MEAN

25+ COULD THIS BE YOU?

GENESUS IS PLEASED TO CONGRATULATE THE 66 GENESUS CUSTOMER HERDS THAT ACHIEVED OVER 25 PIGS WEANED PER YEAR IN 2008. IT TAKES EXTRAORDINARY EFFORT AND MANAGEMENT TO REACH SUCH LOFTY PRODUCTION ACCOMPLISHMENTS.

At Genesus we are proud these award winning producers have made the decision to choose Genesus as their genetic source.

Genesus continues to invest intensively in genetic improvement and testing. Genesus has the world's largest registered Purebred Swine Herd and is the largest producer of Yorkshire-Landrace F1's derived from registered purebreds.

The combination of purebred genetic enhancement which maximizes heterosis and the Genesus customer's superior management leads to production results that are creating new industry benchmarks.

www.genesus.com 1-888-572-4647