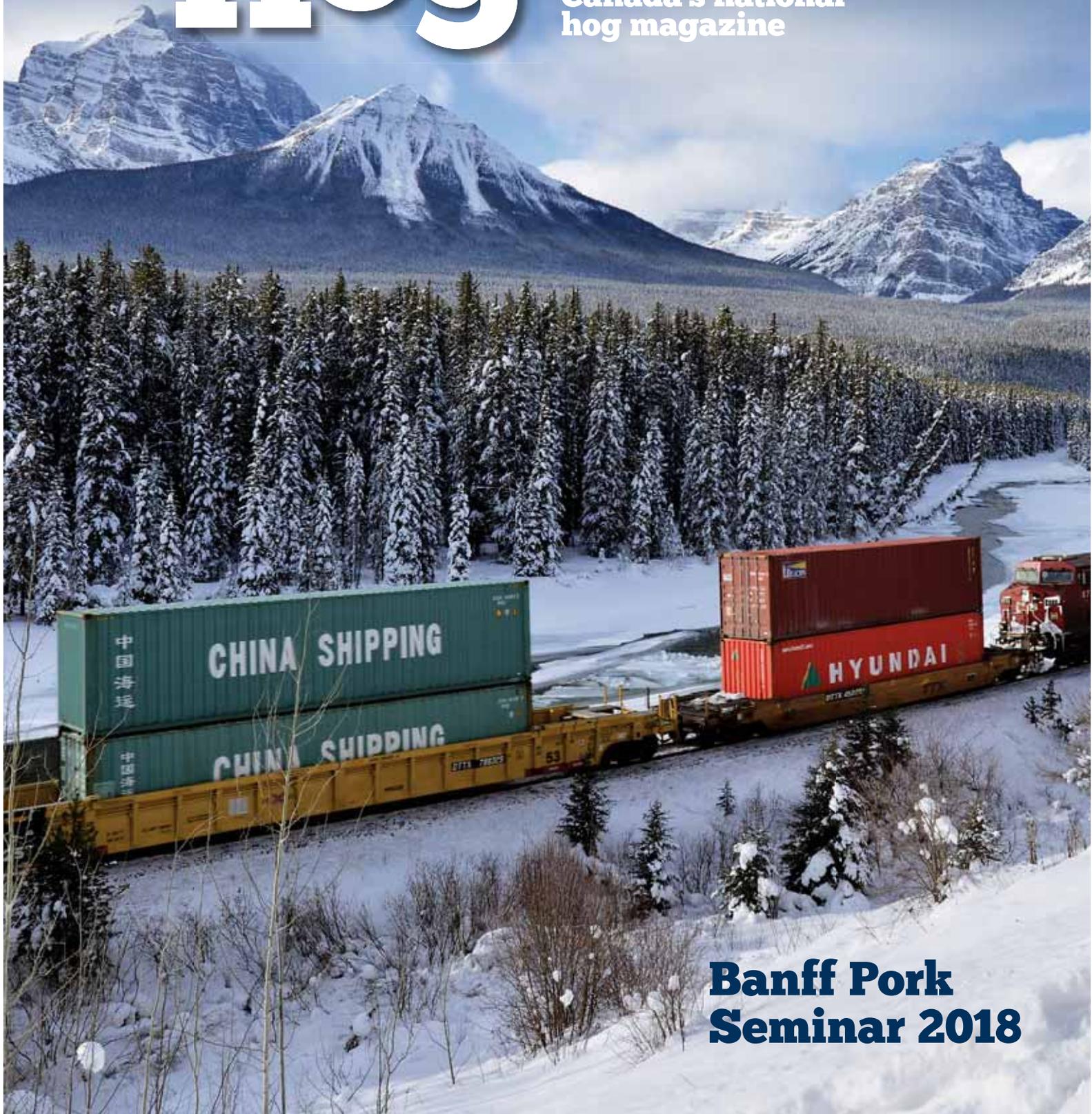


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Morant's Curve, near Banff, Alberta.
Bryan Passifume photo.



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Message from the editor

Welcome to our coverage of Banff Pork Seminar 2018! If you were there, you know the event was incredibly successful, and pretty much sold out. If you weren't, start making plans for next year!

I am always impressed by the diversity of topics covered, by the attendance at each breakout session, and by the atmosphere. Everyone is there to learn, to network, and to have a little bit of fun. That spirit is reflected in every aspect of the seminar.

This is Mark Chamber's last year as chair of the advisory committee of BPS, and he will be greatly missed. Thank you to the rest of the committee, which spans most of the country, and a special thanks as always to Ashley Steeple, the conference coordinator who turns enthusiasm into magic every year.

The next seminar will be held again at the majestic Banff Springs Fairmont Hotel, January 8-10, 2019. Registration opens in September, and you can visit www.banffpork.ca for more information.

Also, it's not too late to send in photo submissions for our spring front cover! Email me at sherimonk@gmail.com and don't forget to look for our page on Facebook at www.facebook.com/CdnHogJournal - or simply search in Facebook for Canadian Hog Journal.

See you in spring!
sherimonk@gmail.com

Sheri Monk
Editor, business manager

Plenary Session 1, Part 1 When the headline is YOU

Jeff Ansell pulled back the curtain on media practices and pitfalls.

By Terry Hockaday, Meristem

Jeff Ansell has worked both sides of the desk. First as an investigative journalist, then in public relations and marketing, he now uses all those experiences to counsel companies who need help managing their messages when dealing with media.

Ansell says today truth is not good enough. "Truth and perspective have become casualties of a media that does its research on the run, while it writes history in a hurry."

Media is looking for good versus evil in a story Ansell says. The grey area is complicated and most media outlets are not inter-

CONTINUED ON PAGE 6

ested in complicated today. This unfortunate truth is played out again and again when agriculture's bad news stories make the headlines and the good news is left uncovered.

As well, consciously or not, reporters use a bit of a boiler plate when telling stories. The media creates "characters", and set up their questions to bring their narrative to life. The characters are generally a victim, a villain, and a hero as well as a witness, an expert and a village idiot.

"In livestock agriculture, the victim is often the animal and the villain is often the farm or producer. The hero is too often an activist group," says Ansell. The witness role may be filled by a disgruntled employee and the expert will tell you how things ought to be, such as a veterinarian or government regulator. "The village idiot is the one who got us into this mess or made the problem worse. And reporters often expedite the process by filling the roles of villain and village idiot with the same person.

"If today the 'Headline was You' – how much faith would place in the media to get your story right? Because unless the reporter works for trade media and understands the complexities of the industry, they are likely to be biased from the start." Ansell says dealing with media is a bit of "an unnatural dynamic that bears no resemblance to everyday conversation," but those in the industry should not be afraid to speak up.

He adds what many in the agriculture industry already know – that when in a battle between facts and emotions, emotions always win. The impact of emotion should not be underestimated. "Ignore it at your peril. It is an avalanche."

A comparison of two Canadian meat crises – the XL Foods E.coli-related recall and Maple Leaf's listeria outbreak- illustrated what a difference addressing the issue and facing the media can make. "Every situation is different. But I will suggest that, more often than not, when bad news happens on your watch, you have to be among the most upset, the most aggrieved, the most outraged. You need to show your stakeholders you get it. And ideally, that would be genuine," says Ansell.

The value compass is a tool he uses to answer the question – *What is the right thing to do?* "The value compass reflects the words you would use to describe how you would like your stakeholders to view you. Words like honest, empathetic, accountable." He feels the compass is critical when you want to win in the court of public opinion.

Interviews are inherently stressful and Ansell says most people will go through a series of stages during a tough, combative interview. The first is to stop breathing, then to stop listening in an effort to formulate a response, and then "we enter an out-of-body experience." Strong messaging and clear answers are seldom achieved in this state.

Ansell shared his "Fluster Strategy" for producers who find themselves struggling in an ambush interview:

- **Breathe** – Media hopes you will answer right away instead of taking time to think about your answer, so breathe and give yourself some time.
- **Repeat the questions** – Ask the reporter to repeat the question "Excuse me, could you repeat the question?"
- **Request clarification** – Finally, ask them to clarify what it is they are looking for. "Help me understand the context of the question."

A highlight of the talk was a demonstration interview with volunteer Ben Woolley from Sunterra Farms. It showcased some of the pitfalls producers can encounter when speaking with media who have cast them as "the villain". Ansell demonstrated alternate ways for Woolley to answer the tough questions and then played the mock report that was generated with his original answers.

Ansell had these final words for the crowd of over 700. "When the headline is you, the messages you create, the narrative you construct, the answers you give, the comments you offer, the story you tell must truly reflect your value compass. And remember, the general public and the media don't care how much you know until they know how much you care." ■

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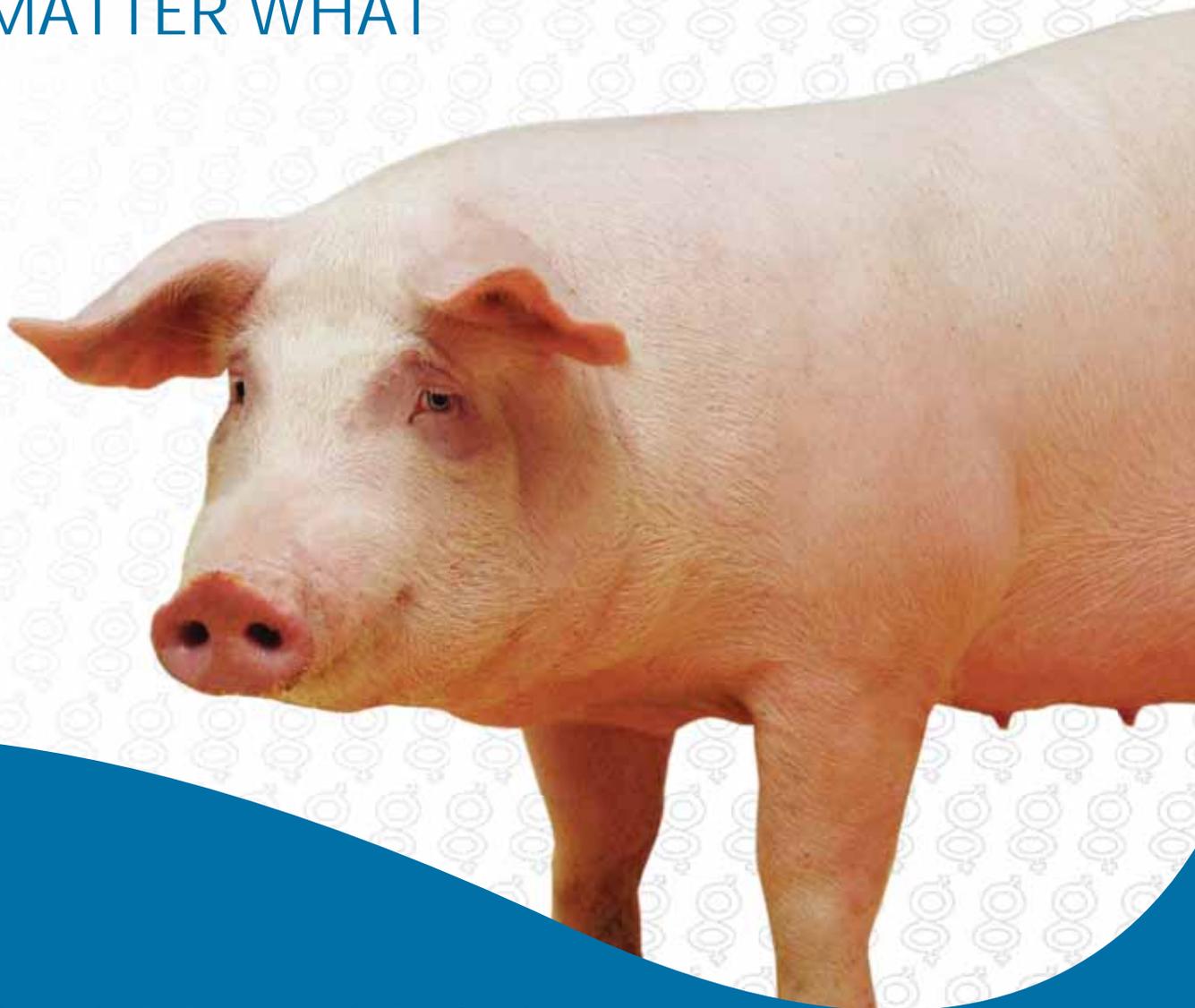
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Plenary Session 1, Part 2

Use futures and options to help manage risk

Date posted: January 11, 2018

By Terry Hockaday, Meristem



Dr. Larry Martin

“I work with a lot of people managing risk and pork futures are one of the hardest to trade.”

Dr. Larry Martin started his presentation to the 2018 Banff Pork Seminar with that statement. He had the tough task of covering what he teaches in a several-day course on futures trading and risk management in a 45 minute plenary presentation. Judging by the number of people who lined up to talk to him as his presentation

ended and people headed to break, the veteran market analyst and farmer risk management coach reached his goal.

Martin works with farm and agribusiness clients to manage price risk. He describes the issues in managing price risk as including failing to sell at high prices and then taking low ones; forward contracting at relatively low prices and foregoing opportunity; and, selling futures and then having large margin calls.

“Those are manifestations of fear and greed,” he says. “We constantly have ‘bull bag’ and ‘bear bag’ of things to con-

sider – that’s what makes a market. It is particularly relevant in red meat at the moment – bearish supply numbers, bullish demand, uncertain trade policy. So, the question producers should be asking is whether there are any techniques that can help manage some of these issues in uncertain markets.”

The most frequent, but least relevant question people ask is, says Martin is, “What do you think these hog prices are going to do?” That’s the wrong question, he says. The right question is “As prices change, where do I take action and what action should I take”?

Producers need a plan, he says. The objectives are to characterize the conditions that give rise to the current uncertainty, define some methods of reading price charts that can help change the question from “where do I think prices are headed?” to “where should I take action”?

A plan should suggest and illustrate some trading rules for deciding when and what actions to take.

Martin walked his audience through six chart formations that they could use to help them interpret price trends, to decide where prices are going and what actions they should take.

One of the biggest challenges for producers is discipline, says Martin. Using charts systematically forces a person to take a view of where the market is relative to its recent past – helps identify highs and lows.

This information can be used for forward contracting, but producers don’t need to use futures and options to get value from charts. Obviously, they are not always going to be correct, but it helps identify places with high probability of doing well on futures or options. It helps reduce “losses” by limiting margin payments, or it helps retrieve some of any price appreciation after contracting with Calls.

It gives disciplined decision rules that helps keep losses smaller. ■

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Breakout Session 1: Mycotoxin detection and solutions

By Bryan Passifume

It's a problem that's at risk of mushrooming out of control for not only hog producers, but all commercial animal operations. While science has identified over 250 distinct toxins produced by moulds, only a handful are of concern to agriculture.

Dr. Max Hawkins of Alltech's Mycotoxin Management Team knows well the impact mycotoxins – poisonous compounds produced by mould and fungus – in swine finished feeds can have, especially when multiple strains are present.

Donald W. Giesting, Ph.D., of Provimi North America/Cargill Animal Nutrition, shares his wisdom on not only detecting the presence of mycotoxins in production, but finding solutions to deal with it.

Part one - The prevalence and effects of mycotoxins in pigs

Mycotoxins are a real and tangible danger, and gauging their impact can be complicated when one considers the impact of multiple types of fungi in a single sample. While deoxynivalenol (DON) is the mycotoxin commonly found in 95 per cent of North American swine finished feeds – Alltech's Harvest Analysis finds 5.81 mycotoxins per sample – Hawkins said it isn't the only one to worry about.

Ninety-two per cent of samples were also found to contain fusaric acid, 75 per cent contained fumonisin, and T-2 was discovered in a little under half of tested specimens.

Evaluating multiple mycotoxins

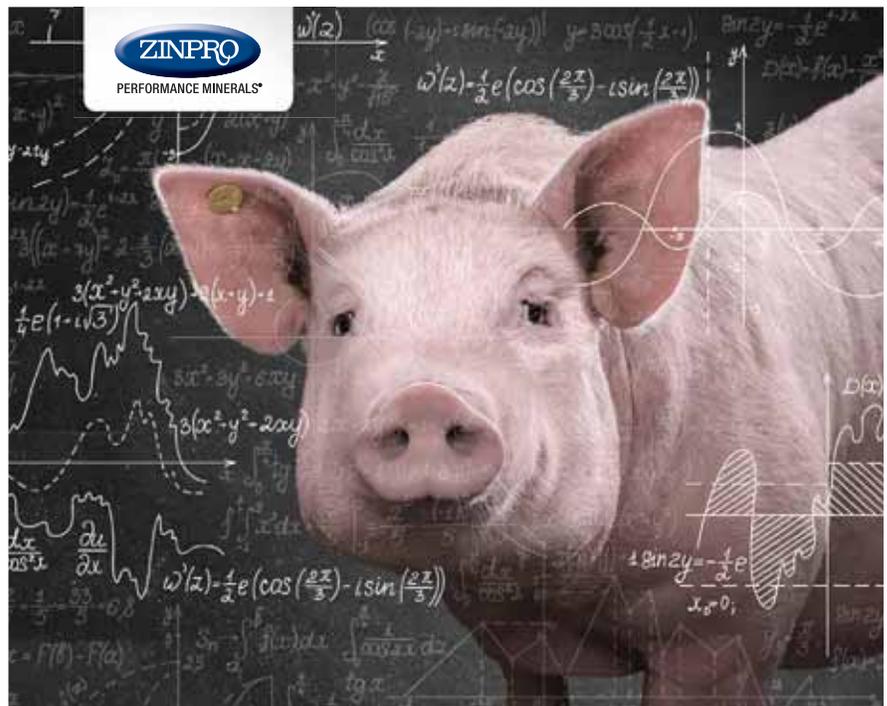
Regulations used by experts, suppliers and even the government on mycotoxin limits in feeds are common points of discussion in the industry. While developed directly from studies and data, many concentrate on the presence of only one type of mycotoxin.

Research, Hawkins maintains, indicates the negative impacts these toxins can wreak on production animals can be both cumulative and subtle.

"Only considering dramatic or maximum negative impact of mycotoxins may not be correct for optimum pig performance and health," he said.

To that end, he described Alltech's Risk Equivalent Quantity (REQ) methodology of helping determine that risk – accounting for

CONTINUED ON PAGE 10



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all mycotoxins present in feedstuffs and assigning a score based on findings. Consumption of these toxins in production swine can add up, Hawkins said – regardless of the amounts present.

“At the least, mycotoxins will have additive effects,” he said.

“Many will also contribute synergistic effects as well potentially magnifying the effects of other mycotoxins at lower levels.”

2016 Mycotoxin Crop Survey

Internationally accredited, Alltech’s Analytical Services Lab surveyed feedstuffs and finished feeds for 38 individual mycotoxins across the continent.

The results are telling.

- Corn, on average, was found to contain 3.28 mycotoxins per sample, consisting largely of DON, fusaric acid and fumonisin.
- Wheat contained an average of 2.28 mycotoxins per sample: DON, ergot and fusaric acid.
- Like corn, DON, fusaric acid and fumonisin were found in samples of distiller’s dried grains with solubles (DDGS,) but at a higher concentration of 7.45 mycotoxins per sample

- Wheat shorts contained DON, ergot, and T-2 at 3.91 mycotoxins per sample.

Corn and wheat, Hawkins said, contained DON in 72 per cent and 61 per cent of samples respectively. Ergot was present in 21 per cent of wheat samples. As for risk, 58.4 per cent of corn samples rated as moderate- to high-risk for grower and finisher hogs, while 65.5 per cent are at the same risks for nursery pigs.

“These grains typically make up a large portion of a finished swine feed and a large percentage of this risk will be transferred into the finished feeds,” Hawkins said.

Cost-cutting measures mean by-product ingredients such as DDGS and wheat shorts are becoming more common. These, he said, concentrate mycotoxins present in the original grain and likewise increase risks to herds.

The survey found that finished feeds contained, on average, 5.81 mycotoxins per sample.

- For nursery pigs, feed contained 5.64 mycotoxins per sample on average, containing 2 to 10 measurable mycotoxins.
- Those numbers increase for grower and finisher hog feed, averaging 6.07 mycotoxins per sample and a greater range of 0-14 mycotoxins – most likely due to the use of by-product feedstuffs.
- Again, DON, fusaric acid and fumonisin were most common, with T-2 present in nearly 60 per cent of feed samples.

More mycotoxins = more trouble

While mycotoxin risk is usually gauged by observing dramatic herd effects, research suggests impacts on swine can be more subtle.

“Often the impact of mycotoxins is not seen until closeouts are ran,” Hawkins said.

“By then, it’s too late to correct the negative impact.”

Using obvious indicators such as feed refusal, vomiting, diarrhea, respiratory disease and secondary infections aren’t very useful, he said, explaining that using REQ calculations can help estimate the impact mycotoxin infestations can have on herd performance and economic traits.

Even for feed determined to be at low risk, average daily gains (ADG) for nursery pigs can fall by one per cent. That loss of grows increases to two per cent for moderate-risk feed, and jumps as much as nine per cent for feed with a high-risk REQ number.

“If there is an expected ADG of .381 kg per day, that would result in 3.81g, 7.62g and 34.29g less gain/day for low, moderate and high REQ respectively,” he said.

“This would result in a 45-day nursery with pigs that weighed 171.4g, 342.9 g and 1,543.1 g less weight per pig.”

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1. Goodreads: Temple Grandin Quotes. <https://www.goodreads.com/quotes/422878-we-raise-them-for-us-that-means-we-owe-them>. Accessed August 8, 2017.

Those losses jump dramatically for grower/finisher hogs – up to 14.5 per cent for feed rated as high-risk.

Mycotoxins also impact feed conversion rates (FCR,) with research suggesting an impact of .4 per cent for low-risk feed, and 1.6 per cent for high.

“This could result in .05 to .80 kg. per pig additional feed when the target FCR is 1.53,” he said.

“In grower/finishers, this range could mean an additional 9.12 kg. of feed for low risk REQ, to 18.24 kg per pig for a high REQ to produce the targeted 101 kg per pig gain.”

Management, environment and herd health all have a measurable impact on mycotoxin effects. Hawkins said production and economic impacts are always variable, but it’s important to understand that even low-risk feed can have negative effects.

Part two - Mycotoxin detection and solutions

For Canadian swine producers, two mycotoxins are predominately responsible for both negative herd impacts and countless sleepless nights for producers. While most species of fusarium fungi are benign, some prevalent in cereal crops produce deoxynivalenol (DON) and zearalenone (ZEA) toxins – a serious risk to both animal and human health.

These, said Donald W. Giesting, Ph.D. of Provimi North America and Cargill Animal Nutrition, manifest in organ damage, immune response suppression, and predisposing animals to viral or bacterial infection.

“The resultant measurable effects are reductions in animal performance, decreased reproductive efficiency, lower pig viability and survival rates, and higher morbidity and mortality throughout the growing period,” he said.

“Of course, these effects can strongly

impact the economic viability of swine enterprises.”

Assessing your risk

Before control strategies are considered, one must know their risk factors. Giesting suggested not only assessing the prevalence and conditions favourable to the growth of toxin-producing moulds, but also determining the effects and levels of mycotoxin damage and establishing meaningful toxin-level estimates in grains, by-products and finishing feed.

The mere presence of moulds, Giesting explains, isn’t always a reliable indicator of the presence of mycotoxin.

“Moulds generally produce mycotoxins as a defense mechanism in response to stress,” he said.

“While mould at a meaningful level is a necessary prerequisite for mycotoxin production, the level of mold is not a good predictor of mycotoxin prevalence.”

Fusarium usually only produce toxins when conditions are wetter and colder than they prefer for optimum growth – a stark contrast to aflatoxin production in aspergillus moulds, which occurs when conditions are dry and hot.

Herd impacts of DON and ZEA

Swine impacts of DON normally occur in concert with related toxins, as DON isn’t normally found alone in foodstuffs.

Effects due to chronic exposure tend to be cumulative, increasing reproductive failure and poor lactation in sows, reductions in feed rate intake and poor gains. As previously mentioned, eating infected food can also make herds more susceptible to infections or disease, and exposure doesn’t necessarily have to be chronic for impacts to be felt.

- Initial DON levels in excess of one ppm in unaffected swine, especially young animals, can result in modest feed intake reductions
- DON contamination exceeding five

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ppm for naive swine can trigger intake reductions anywhere from 25-to-50 per cent

As ZEA is an estrogenic compound, its impacts can be largely seen in both gilts and sows.

The toxin causes premature mammary and genital development, –even at levels as low as 0.5 ppm in feed.

Levels as high as one ppm are potentially problematic in most reproducing swine, Giesting said.

Monitoring mycotoxin levels, and the importance of sampling

Using herd effects alone as a means of determining mycotoxin impact is problematic, as environmental, social and disease can also be factors.

“Animals in low-stress conditions often appear to have much higher tolerance for mycotoxins than those in commercial production situations,” Giesting explained.

Determining toxic load can also be a challenge, he said, as even tiny changes in feed storage conditions, locations and dispersal can wildly impact results.

Therefore, sampling technique is crucial.

“In general, taking at least 50 large – more than 500 g – samples from within a storage or grain handling container is recommended,” he said, suggesting the best and easiest way is to take samples from flowing grain.

From there, blending the samples and using sub-samples often gives the best representative results.

“Frequent sampling at time-of-storage, and pooling results from samples within a geographical region where grain and grain byproducts are sourced are powerful ways to improve accuracy of the assessment of the mycotoxin risk facing a swine enterprise,” Giesting said.

“Surveys can be very useful – but require meaningful sample numbers and good sampling near to grain or feed sources to be predictive.”

Reducing the risk

Once samples are taken, what can be done to mitigate the risk?

Managing risk factors is key to controlling mycotoxin contamination, he said – regardless of how and where feed enters the production:

- Avoiding contaminated feed ingredients through risk-based monitoring

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- Limit the impact of unavoidable toxin effects by using available technological ingredients

Feed ingredients designed to mitigate the impact of toxins are useful, Giesting said. These compounds naturally bind to mycotoxins and either reduce their toxicity, reduce uptake in the animal's digestive tract, or fortify the animal's ability to deal with their effects.

Compounds that reduce digestive absorption are less effective on DON, so methods to reduce its toxicity have been developed – with mixed results.

Sulphur-containing preservatives that depress the effects of DON in vivo have shown the most promising results, at least over other methods that rely on modifying the toxin's microbial or enzymatic configuration.

While shown to be effective on herd diets in the United States, sulphur-containing preservatives are not yet approved for use in Canada, although regulatory approval efforts are currently underway.

As for controlling ZEA, studies have shown the toxin is susceptible to binding by certain clay-type structures – showing reductions in negative reproductive effects in treated animals. These treatments are permitted in both Canada and the U.S.

While there's no such thing as a guaranteed barrier between herds and mycotoxins, it's certainly possible to greatly reduce impacts on both herd health and economic returns by following three key principles:

- Monitoring raw materials
- Proper materials management to reduce further toxin development – especially in younger animals
- Taking advantage of feed additives to reduce the impact when risk of contamination is unavoidable. ■

Breakout Session 2: Personality typing and profiling – effectively communicating and working with various personalities

By Bryan Passifume

Whether it's on the farm or in the office, the people factor reigns supreme.

Getting to know, and learning how to interact with those you work with can not only make all the difference in how a workplace functions, but also in the morale, motivation and retention of key personnel.

Trish Hyshka, human resources manager at Sunterra Farms in Acme, Alberta, says being knowledgeable of each individual and their unique personality types can reap benefits.

“Understanding ourselves and our own personality – and why we behave or react the way we do – is the first step,” she explained. “The second step is appreciating others for who they are and realizing why we work well together or why we get frustrated with each other when working on different projects.”

Learning the personality types of those on your team, she said, is invaluable in learning about

- Their strengths
- Their weaknesses

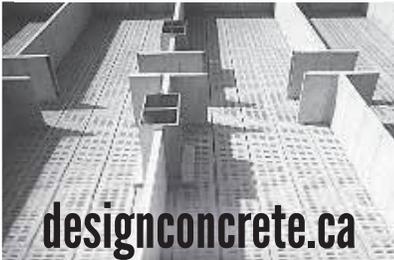
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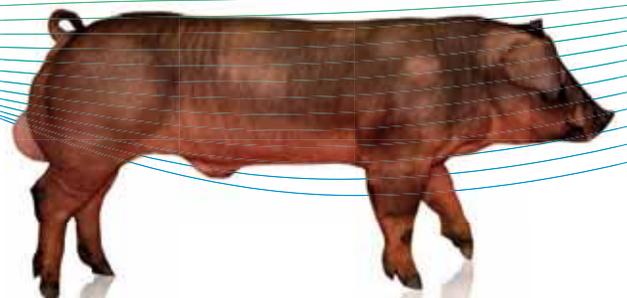


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Personality plus

Developed by David Keirsey, the Keirsey Temperament Questionnaire has become one of the world’s most widely-used personality assessment tools.

When completing the questionnaire, she says it provides us an opportunity to reflect on how we react and respond to different situations.

“Our answers summarize into a Four Letter Personality Type Indicator,” she said.

“The characteristics of our personality explain what our natural fallback is in different situations. It is critical to keep in mind that this is how we respond or act when all playing fields are leveled and we are not in a crisis or emergency mode.”

In such crisis situations, Hyshka explained, instincts and comfort zones go out the window.

The first letter, she said, indicates if you’re introverted or extroverted.

“Extroverted indicates that you are energized by ‘outside’ or ‘external’ sources,” she said.

“You enjoy conversation, when problem-solving you like to talk things through, you are quick to respond or make decisions – quite often you only see the goal line and not all the passes in between.”

Those who are introverted, on the other hand, are internal thinkers – thinking through decisions before taking action.

The second letter determines if a person is ‘intuitive’ or ‘sensing.’

“If you are ‘Intuitive’, you look at the big picture, what is possible, you are very imaginative and you trust and act upon inspiration,” she said.

“If you are a ‘Sensing’ person, you are more focused on ‘real’ and tangible information, wanting real-life examples, there needs to be an amount of certainty and trust and act upon experience and statistics.”

The third letter differentiates between thinkers and feelers.

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the most important piece of a productive workplace? Are you analytical? Do you feel that everyone should be treated the same? If you answered yes to the questions above, you likely have a “Thinking” personality type,” Hyshka explained.

“If you are more concerned about how decisions and actions affect the people, are very concerned about harmony, feel that a happy workplace is the most important factor and feel that everyone should be treated as an individual, you likely have a “feeling” component to your personality type.”

The last of the four letters indicate if you’re a “Judger” or a “Perceiver”.

Judgers, she said, are typically interested in planning, being organized, orderly and need decisiveness.

That’s in contrast of Perceivers, who tend to be open to new ideas, are driven by deadlines and are flexible and often spontaneous in their decision making.

Putting it all together

Naturally, problem-solving is a huge function of any team, she explained.

A cohesive and effective team can quickly break down due to personality conflicts – but that doesn’t always have to happen.

“If you have different personalities on your team, it can pose frustrations at times,” Hyshka said.

“But when it comes to problem solving, it can be very beneficial.”

Here’s why determining and grouping personality types is important:

- Sensing personalities may focus too heavily on past experience and be less apt to explore new options
- Intuitives will likely get too caught up in new ideas at the cost of reality and past experiences
- Thinkers will focus on efficiency instead of the human factor and the values and impact of their decisions
- Feelers will concentrate too much on the human factor and not the consequences of not making the hard choices

“All of the different tendencies will keep the others in check and bring different perspective and insight to the situation,” she said, making for a well-rounded and effective team that can combine both their gifts and their weaknesses.

All of this isn’t meant as a crystal ball to predict future actions through personality sorting, she said – rather a means of appreciating how different people approach problems and deal with crises.

“It allows us to bring different strengths, opinions, and perspective to the table during discussions,” she explained.

“It allows us to make sound decisions and to grow stronger as a team.” ■

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Breakout Session 3: Feeding the grow-finish pig

By Bryan Passifume

Ask any farmer: most of the money spent in any commercial animal operation is feed – amounting to up to 60 per cent of overall production costs. Getting the most bang out of one’s food buck is key to a successful operation, and balancing nutrients and quality can make or break.

Candido Pomar of Agriculture and Agri-Food Canada spoke of this delicate balance and the challenges behind estimating optimal nutrient allowances in growing-finishing pigs.

Dr. Bob Goodband, Swine Nutrition and Management professor at Kansas State University, talks of developments in modern swine production feed.

Part one - The challenges and future of balance

Animal maintenance, growth, and production hinges on the nutrients they receive in their daily diets. Throughout the animal’s life, energy, amino acids, minerals, vitamins, and water must be provided in just the right amounts to ensure healthy and economically-useful growth.

“Ensuring the optimal provision of the required nutrients while minimizing its excess will have great impact on profitability and on the sustainability of the industry,” Pomar said.

To do that, producers must follow four key points:

1. Precisely estimate the amount of nutrients that will be available for the animals’ metabolism in feed ingredients;
2. Estimate the amount of nutrients required by each animal throughout the growing period;
3. Formulate balanced diets that limit excess nutrients;
4. Concomitantly adjust the dietary nutrient supply to match the animals’ estimated requirements.

“The amount of nutrients that feed ingredients can provide to the animal’s metabolism can be estimated based on their chemical composition, digestibility, availability and metabolic fate,” he said, pointing out the importance to consider the addition of enzymes, feed physical treatments and other factors.

In other words, oversaturating animals with nutrients above what their bodies are capable of absorbing is quite literally leaving money on the production room floor.

To that end, he proposed the concept of “precision feeding” as an efficient means of maximizing nutrient uptake while reducing costs – and could potentially change the feeding methodology of swine producers in the future.

The challenges of estimating nutrient requirements

Not only do producers have to determine what nutrients exist in their available feed, they need to figure out what best meets the dietary needs of their herd.

To do this, Pomar said one needs to determine what animals will be receiving the feed, how long they’ll be exposed to it, and the producer’s production goals for the herd.

“Nutrient requirements are frequently defined as the minimum amount of nutrients needed by an animal to satisfy the biological processes associated with tissue maintenance and repair, growth and all other productive processes, thus preventing signs of deficiency and allowing the animal to perform its necessary functions normal,” he said.

CONTINUED ON PAGE 20



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These requirements become challenging when faced with the realities of large-scale commercial production, where tailoring diets to each individual animal become impractical.

As well, the wild variations in size, health, and temperament from animal to animal presents other challenges, and negate using bare averages to determine optimal feeding.

“Therefore, when feeding populations of animals, nutrient requirements should be seen as the amount of nutrients needed for specified production purposes, such as optimal growth rate, protein deposition and feed efficiency – or for the optimal balance between the proportions of pigs that will be overfed and underfed,” he said, explaining nutrient amounts should evolve over time, and vary according to each herd and its production environment.

Current methods

Today, producers typically employ two methods for estimate nutritional requirements: empirical and factorial.

“In the empirical method, nutrient requirements are estimated by feeding groups of pigs with increasing levels of the nutrients under evaluation and measuring one or more sets of response criteria, for example; growth rate, within a given time or weight interval,” Pomar explained.

That differs from the factorial method, in which estimations on daily nutrient requirements are derived from combining requirements for both maintenance and production.

“These requirements are estimated for each nutrient, taking into account the efficiency with which each nutrient is used for each metabolic function,” said Pomar.

While both philosophies estimate requirements based on studying nutritional intake versus results, the factorial method estimates requirements of a single animal over a short period of time while the empirical method is based on larger herd requirements over a longer period of time.

“Due to the difficulty and cost of using the empirical method, factorial estimates are often extrapolated to populations on the assumption that the animal used for the factorial estimate is representative of the population,” Pomar said.

“However, because of inter-animal variations and the dynamic nature of animal responses, it is difficult to determine which animal in a population should be used to estimate the population requirements.”

A look ahead – precision feeding

Pomar described precision livestock farming as an innovative approach to commercial production, one that potentially could change how swine are raised and fed in the future.

Precision feeding, he explained, involves providing just the right amount of feed with the right composition at the right time – either to a group of animals at once, or individual animals within the group.

Developing such a system requires the development of feeder units capable of measuring metrics such as feed intake and body weight, and applying it to estimates of nutritional needs and prevailing growth trends.

To that end, mathematical models have been proposed to do just that, deriving daily amino acid requirements and optimal dietary concentrations for each individual animal, according



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Real-world impacts of precision feeding, as well as calibration and validation trials were carried out and evaluated at Agriculture and Agri-Food Canada's research and development centre in Sherbrooke, QC.

Pigs were maintained in thermo-neutral conditions, water was provided with low-pressure nipple drinkers, and feed was provided to each animal via electronic feeding stations.

"Feeding stations identify each pig when its head enters the feeder, and deliver, in response to each animal request, a blend of feeds containing the concentration of nutrients required according to the assigned experimental treatment," Pomar explained.

The equipment was programmed with time-delays to ensure food was eaten before an animal requested a new serving – the size of which was gradually increased during the experiment, ranging between 15 and 25g.

"Feeds were independently formulated in each of the trials and differed from each other in the nutrient density, and the same methodology was used for data collection in all trials," he said.

Animals were weighed weekly, and x-ray densitometry measured body composition at the beginning of each feeding phase.

The study concluded that dynamically feeding pigs in accordance with their individual needs is "essential to maximize nutrient efficiency and ensure the sustainability of the pig industry," Pomar said.

"The new nutritional approach represents a paradigm shift in pig feeding because the optimal dietary nutrient level is no longer considered a static population attribute, but rather a dynamic process that evolves independently for each animal."

He called precision feeding a highly-promising avenue for improving nutritional efficiency, and expects more attention to come from it in the future.

Characterization of short-and long-term feeding patterns in individual pigs, and identification of any disruptions of these trends, are being included in research projects today with the objective of developing automatic tools that would allow early detection of health, environmental or other problems," he said.

"Pigs seem to have a limited ability to modify their feed intake to compensate for other nutrient deficiencies or excesses. However, pigs seem to be able to offset some nutrient deficiencies by increasing their nutrient efficiency rather than modifying feed intake."

CONTINUED ON PAGE 22



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Part two - Recent developments in nutritional programs for wean-to-finish pigs

Over the past three decades, swine growth performance has been incredible improvements. Average market weights in 1980 were 110 kg. for pigs with more than 25mm of fat on the 10th rib, producing less than 35 kg. of lean meat from the carcass. Ten years later, pigs grew 575g per day with a 3.2:1 feed efficiency from wean to market.

Today, the average market hog sees daily gains of 730 g. per day, boasting 128 kg. average market weights with 18mm of backfat, producing over 54 kg. of lean meat.

That's a 38 per cent increase production increase, with only a 10 per cent increase in animals harvested annually.

"While certainly genetics has played a huge role in these improvements, a solid nutrition program is critical to allow today's pig to express their true genetic potential," said Kansas State University's Bob Goodband.

"Under these circumstances, nutrition programs are evolving to meet the lean growth requirements of the pig, but also produce pork in an economical fashion."

Pig diet details

While lysine is essential in weanling pig diets, today's producers are using feed formulations that concentrations of less of the important amino acid and crude protein than in years past while maintaining similar growth performance. This success of this strategy, Goodband explains, rests in the need

to keep diets for 10 to 20 kg. pigs a relatively high dietary lysine concentration of 1.35 per cent.

Increasing lysine contents as pigs age, he said, keeps feed costs low.

Maintaining adequate levels of other amino acids is simply a matter of expressing them in a ratio relative to lysine intake, he said.

"By doing so, we can determine a requirement for maximizing growth and feed conversion, but also develop a model that predicts the change in a response criteria (i.e., average daily gain) if different ratios of the amino acid relative to lysine are selected," said Goodband.

That way, producers can keep a close a close handle on feed costs while fine-tuning production goals.

For grower-finisher pigs, lysine concentrations in feed increase due to daily increases in average daily gain and feed efficiency.

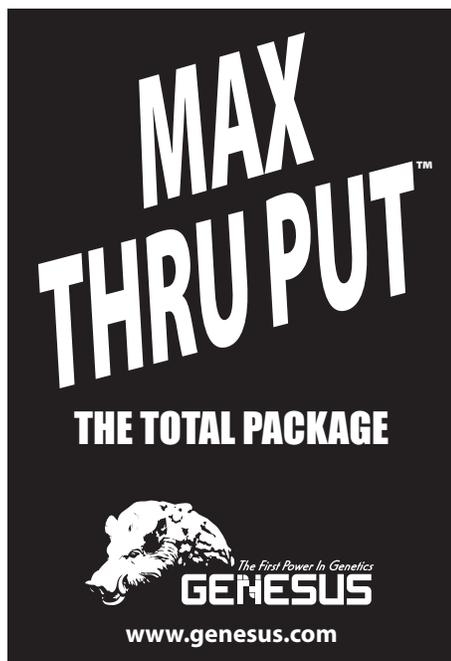
A recent study evaluated four dietary feeding approaches – the first three were four-phase regimens with goals intended to maximize growth, maximize income over feed costs, and standard diets that maximized concentrations in the latter two phases. The fourth approach was a simple two-phase feeding regimen.

"It appears that pigs fed slightly below their ideal lysine requirement early in the growing phase, had compensatory gain in later finishing providing that lysine was adequate," Goodband explained.

"Overall, results suggest that feeding lysine levels for maximum growth and efficiency in either a two or four-phase feeding program results in the same growth performance and feed cost and that a broad range of lysine specifications within the levels tested herein can be utilized in grow-finish diets without compromising income over feed cost."

While herd nutrition strategies have certainly evolved, Goodband said the fundamentals of customizing diet to a farm's specific conditions still apply – use goals to determine ideal dietary energy densities, select lysine and phosphorus levels based on a nutrient to calorie ratio, and use lysine content to balance other amino acids.

"With application of new statistical modelling techniques to determine ideal nutrient concentrations, pork producers with their consultants can determine the most economical formulation strategy and feeding regimen for their farm," Goodband said. ■



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²Li QF, et al. (2015). *Parasitol Res.* 114(9):3325-3528.

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Breakout Session 4: Piglet management

By Bryan Passifume

When it comes to any successful swine operation, it's important to get things off on the right hoof. A successful transition during weaning is vital to ensure the continued animal performance and profitability.

Joel Spencer, director of customer innovation at JBS United, educated attendees on the pitfalls of a 'one feed fits all' approach for modern production scenarios.

Gustavo Pizarro of Pipestone Veterinary services shares his unique experiences helping establish and commission a modern 10,000 sow production plant in northern Mexico – a locale learning the importance of biosecurity over traditional pig farming practices.

Part one - Nutrition to support healthy weaned pigs

One of the most important stages in any pig's life – and one that sets the stage for its days and months ahead – is weaning. While the wean is crucial, Spencer says, it's just one of many transitional points in the nursery that impact overall profitability.

"Successful transitions throughout the nursery program are critical to capturing the investments made at the time of weaning," he said.

"Stepping back and understanding these transitional points will help producers discern what technologies or investments can actually bring value to their operation."

When it comes to ensuring a successful transition however, Spencer said it's all about the basics.

Multiple nursery transitions

The key to a healthy and viable piglet depends on early and vigilant feed intake, Spencer said.

"The intestine of the weaned piglet is a diverse organ that not only absorbs nutrients and secretes water and electrolytes; it also forms a barrier against pathogenic bacteria," he explained.

"The importance of stimulating early feed intake and maintaining high levels of intake without disruptions is critical in a nursery program."

Getting that weaned pig interested in eating feed immediately truly does set the stage for its future viability – every hour that goes by without that intake can:

- Increase the risk of intestinal pathogens;
- Reduces the ability to absorb nutrients;
- Increase the risk of nutritional hypersensitivity.

Just as important as early feed introduction, Spencer stressed the importance of correct feed introduction.

Providing feed that doesn't meet the digestive or nutritional needs of the piglet can be just as damaging to its health.

"Poor nutrient utilization can occur when ingredients with lower digestibility are used," Spencer said.

"Nutritional imbalances occur in dietary formulation, or animals aren't moved forward through nursery budgets appropriately."

Pathogens present in the pig's digestive system are more than happy to consume unabsorbed nutrients – leading to reductions in both growth rate and feed efficiency. The same problems occur when pigs are fed milk products or protein sources high in coliform counts, or low digestibility due to excessive heat treatments – both situations creating a fertile breeding ground for gut pathogens. Attempts to cut corners commonly leads to increased feed costs.

Nutrition isn't the only factor in a successful wean. A keen knowledge of one's entire production system can not only prevent problems, but can help recognize issues them before they become unmanageable.

"Disruptions in intake are more obvious, and it is easier to see how they compromise the intestinal barrier," Spencer explained.

"However, another situation that slows proper intestinal development is when

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the pig isn't transitioned appropriately through a multiphase nursery feed budget."

Within large herd populations, it only makes sense to maintain multiple feed budgets, he said. Providing the same feed to pigs across a range of ages and development stages will result in younger pigs not getting key nutrients, and older pigs fed nutrients their more developed digestive systems don't require. In other words, throwing money out the window.

Technologies to improve gut health and immunity development

Creating a plan – and sticking to it – is key to a healthy and productive herd. While feed additives are useful, Spencer warns they aren't a substitute for good management.

Direct-fed microbials (DFM)

Also commonly referred to as probiotics or live cultures, the live microbial cultures are introduced orally directly to the animal's digestive system. While historic efficacy suggests low success rates, new techniques involving harvesting specific bacterial strains from well-performing pigs show prom-

ise – as are trials involving the health of piglets from sows introduced to DFMs during gestation and lactation.

Prebiotics

Prebiotics specifically target and fortify beneficial intestinal bacteria, giving them an edge in their competition against pathogenic bacteria.

"Prebiotics like chicory root that provide indigestible carbohydrates, or synthetically derived oligosaccharides, are examples of prebiotics commercially available," Spencer said.

"These products are widely used in human nutrition, companion animals, and piglet nursery diets."

Prebiotic use, he explains, have shown promise in this area – particularly against E. Coli.

Phytogenics

These include products derived from botanical sources, such as essential oils, spices, and herbs.

"This class of products does provide some novel compounds that may improve intestinal health and animal performance, but special attention needs to be given to the quality con-

CONTINUED ON PAGE 26

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trol standards of the active compounds within the extracts,” Spencer warns.

“Quantification of the essential components within each product should be provided, along with stability and validated modes of action for these specific products to bring consistent value in nursery programs.”

Acidifiers

Low cost and with demonstrated efficacy, they serve to lower the pH of the pig’s stomach acid – thereby assisting in protein digestion.

“The stomach of the pig doesn’t provide sufficient amounts of acid at the time of weaning,” Spencer said.

“The use of inorganic acidifiers in a pre-starter or phase 1 diet can improve digestion, which leaves less nitrogen or nutrients for pathogenic bacteria to use as substrates.”

While inorganic acidifiers such as phosphoric acid are useful for this purpose, organic acids such as citric acid, fumaric acid or lactic acid are used to treat pathogenic gut bacteria. Butyric acid – a short-chain fatty acid – aid in the health, growth and efficacy of intestinal tissues.

It’s the fundamentals

Maintaining health and productivity hinges on correct choices – not only proper nutrition but proper practices in weaning and transitioning. Ensuring a varied and customized diet that nourishes the pig – and not the bacteria within – is critical to ensuring continued success.

Part two – A 10,000 sow startup in Mexico

Mexico’s pork industry is making itself known on the world market. The recent PEDv outbreaks have forced the nation to drastically change its production methodology, replacing traditional pig farms with modern facilities outfitted with the latest in biosecurity.

Sharing their experiences in the successful commissioning of a 10,000 sow farm in northern Mexico is Gustavo Pizarro of Minnesota’s Pipestone Veterinary Services, along with Ezequiel Guardado of Soles, Sonora, Mexico – who maintain the fundamentals of a successful production can apply anywhere.



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"It has been stated many times that maximum potential in pork production can be achieved by orienting the efforts on four classic components – genetics, health, nutrition-feeding, and management," Pizarro said.

"Also, the human resource factor is key for the performance of any pork production operation – however, the design, layout and equipment of a farm also facilitate the achievement of the farm crew and animal needs."

Design

As the scale of a farm project increases so too does the financial impact of decisions made during development.

"The first, and maybe the most important decision, is the location," he said.

"The location to build a farm must accommodate all the conditions needed to allow for sustainability of the project."

These conditions include biosecurity, water availability, energy, road access, and access to a qualified labour pool.

"Also, the farm culture of the people living near where the farms will be built must be considered," he added.

One of the biggest changes in traditional Latin American pig farming was ventilation, as most farms are open and naturally ventilated, he said.

Closed farm designs that prevent the herd from outside exposure are paramount in biosecurity, Pizarro explained – a philosophy that also limits the number of entry points, the use of showers to demarcate transition points between dirty and clean zones, controlling entry and disinfection of all materials through a single, secure portal, and – critically – the proper design of loading areas.

"Generally, the load area represents the highest risk because it is involved with trucks that go to areas that are potentially contaminated, or they transport animals that are PRRS (Porcine Reproductive & Respiratory Syndrome) positive when there is no biosecurity control in the truck transport operation," he explained.

"The design of the load area is important to allow for protocols that reduce the risk of contamination. Procedures are very important here, for example, the crew working inside the farm, should never enter the truck and come back to the farm."

CONTINUED ON PAGE 28



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He also stressed the importance of establishing clear, documented procedures for each area – ones that are both easily trainable and auditable.

Ease of use and application is important to any farm design, he explained – while also maintaining the fundamentals of health, safety, functionality and friendly to both man and beast.

That includes considerations for pens versus stalls – with Pizarro explaining the decision was made for the latter.

“The level of brightness, slope of hallways, number and location of doors and most importantly – the quality of the door locks and door handles are extremely relevant,” he said.

“When adequate conditions to move animals do not exist, it is common that the farm crew get frustrated and can potentially take their frustration out on the animals – generating a negative interaction between them.”

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The fine art of startup

Getting production on-line presented its own suite of challenges. The fine balance of engineering, construction, electrical, equipment, settlement, animal flow, training and production management were coordinated between Pizarro's firm Pipestone Systems, and the project owners.

“The settlement was made with the PIC Camborough 29 maternal line available in Mexico and the line L03 for internal multiplication,” He said.

“The entry of animals was coordinated according to availability and requirements, with the corresponding quarantine and sampling processes. This included the entry of boars for puberty induction and heat checking.”

Puberty induction started with 26-week old gilts, which were moved to the gestation unit once heats were detected.

Gilts were bred using conventional artificial insemination techniques.

“The first breedings of the project were done with the L03 line only,” he said.

“Given the weight and age of these gilts, it was considered convenient to start breeding them earlier, which represented a good opportunity to train the farm crew with a low number of breedings.”

Upon 112 days of gestation, sows are introduced to the farrowing room, where staff provided constant supervision and paid special attention to colostrum intake, as well as ongoing management of dedicated nurse sows.

“One person was dedicated exclusively to collect colostrum and individually administer it to piglets that did not consume sufficient colostrum,” he explained.

“Feed in lactation is administered ad libitum after the farrowing process, adjusting the feeders according to the feed left in the feeder, keeping them clean.”

People power

Efficient people management was also key to the facility's successful start-up, he reported.

The farm maintained a compliment of 42 crew members, providing a 1:238 staff/sow ratio.

“The farm crew did not have experience in pig production – except for the manager and gestation and farrowing leads,” he said.

“Adequate personnel recruitment, position selection according to people's abilities and characteristics, and constant motivation of the staff have been essential for the implementation and execution of procedures.”

Planning, leadership vital to success

Good, sound planning resulted in the facility exceeding Pizarro's expectations – particularly in terms of breeding targets, allowing for a constant flow for the grower/finisher units and the reproductive cycle.

“Since the start of commercial weans, an average of 6,002 piglets have been weaned per week during the 49 weeks included in this summary,” he said.

“In 2017, the farm will be weaning over 310,000 piglets.”

With startups always presenting challenges to designers and staff, the secret to success is always good practices of coordination and communication.

“When a balance of all the principles associated with production is accomplished, it is possible to fully achieve the genetic potential of females, and this project has demonstrated this,” he said, crediting the facility's management as a key factor in the project's success.

“As many experiences show, the selection of a good farm manager makes a fundamental difference in the performance of a farm. Taking the time to select a proper leader is a practice that everyone should apply.” ■

Mark Wilson, Zinpro: 2018 Foxcroft Honorary Lectureship

By Terry Hockaday, Meristem

There are few things more basic to pork production success than sow lifetime productivity.

Breakout session 6 at Banff Pork Seminar (BPS) 2018 brought together three speakers with compelling information on key aspects of this management area.

One of those speakers was the George Foxcroft Lectureship for 2018, Dr. Mark Wilson of Zinpro. That award is named after Dr. Foxcroft, the University of Alberta professor, research pioneer and industry icon.



Left to right, Dr. Michael Dyck, University of Alberta, Dr. Mark Wilson, Zinpro, and Dr. Ben Willing, University of Alberta.

“The George Foxcroft Lectureship in Swine Production allows the Banff Pork Seminar, in conjunction with the University of Alberta, to host

speakers who are conducting high profile research that is applicable to the pork production industry and will potentially improve production efficiency,” says Dr. Michael Dyck, University of Alberta, BPS program co-chair.

Dyck says each Foxcroft Lectureship recipient receives this award based on the quality of their research and the contributions made to the swine industry.

“The speakers in this breakout session were brought together to highlight various aspects of management and various considerations to make sure sows are being as productive as possible,” he says. “The focus is how long a sow stays in the herd but also how long she is being productive.”

Wilson’s presentation was entitled “The impacts of lameness, longevity and inflammation on productivity and management of the sow herd.”

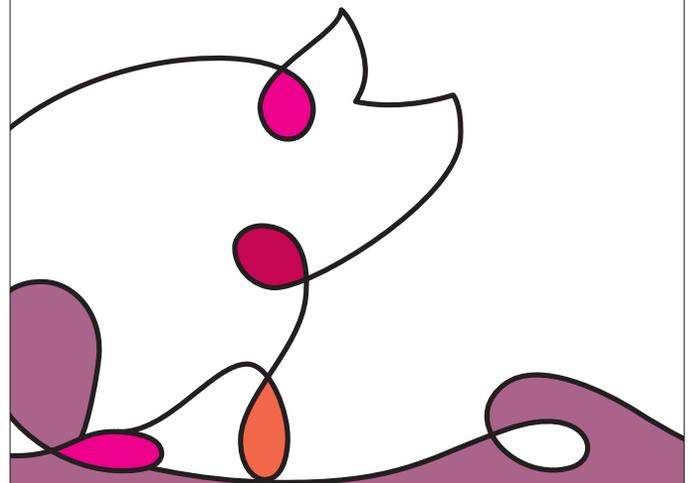
Wilson brings significant experience and success to this presentation. A frequent speaker at national and international swine events, he has spoken in 40 countries. He received his PhD at the University of Kentucky in reproductive physiology. He is currently one of the swine scientists of the research and nutritional services team of Zinpro Corporation. He is also an adjunct professor for the University of Wisconsin and the University of Minnesota. ■

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Student science winners at BPS 2018

By Terry Hockaday, Meristem



Dr. Ben Willing, University of Alberta presents awards to Danilo Sotto, University of Saskatchewan, (right) and Jill Hugman, University of Alberta

Two young scientists at the 2018 Banff Pork Seminar (BPS) were presented with the R. O. Ball Young Scientist Award.

The award is named after Dr. Ron Ball, a long-time researcher and former BPS program director. The award recognizes graduate students who provide a best overall combination of good and relevant science, well-written abstract and excellent presentation.

First prize was awarded to Danilo Sotto, University of Saskatchewan for his presentation “Feeding acid-preserved high moisture barley and its interaction with particle size on weaning pig performance and nutrient digestibility.”

Second prize went to Jill Hugman, University of Alberta for her presentation entitled Growth performance of weaned pigs fed raw, cold-pelleted, steam-pelleted or extruded field peas.”

First place winner receives a \$500 cheque and plaque and second price receives a \$250 cheque.

Dr. Ben Willing, chair of the selection committee, presented the awards. ■

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Banff Pork Seminar 2018 Aherne Prize winners tell their stories

By Terry Hockaday, Meristem

The winners of the 2018 F. X. Aherne Prize for Innovative Pork Production were announced at the Banff Pork Seminar, Jan. 9 to 11, Banff, Alta.

This year two winners shared the prize. Winner for what they term the “ghost gate” were Lyle and Maaike Campbell, Birnam Pork, Arkona, Ont. Winner for the loose housing pen-within-a-pen innovation was Scott Hyshka, Mountain Vista / Sunterra Farms, Drumheller, Alta.

The Aherne Prize has developed quite a reputation in the pork industry says Dr. Ben Willing, of the University of Alberta, chair of the Aherne Prize committee. He says the quality and number of applicants is strong each year.



Two winners shared the F. X. Aherne Prize at the 2018 Banff Pork Conference. Left to right Lyle and Maaike Campbell, Birnam Pork, Arkona, Ontario, Dr. Ben Willing, University of Alberta and Scott Hyshka, Mountain Vista/Sunterra Farms, Drumheller, Alberta.

“This prize recognizes individuals who have developed either original solutions to pork production challenges or creative uses of known technology,” says Willing. “Innovation is a powerful word today in any industry and we are

pleased at Banff Pork Seminar to acknowledge these grassroots innovations in the pork industry.”

The prize is named after industry icon, the late Dr. Frank Aherne, a professor of swine nutrition and production at the University of Alberta and a major force for science-based progress in the western Canadian pork industry.

Here, in their own words, are winners’ descriptions of their innovations.

Ghost gates: Lyle and Maaike Campbell, Birnam Pork, Arkona, Ontario

As progressive farmers we are always looking at improving our bottom line. In 2016 we decided to do a major overhaul of our quarantine barn to achieve better results. Knowing that eventually we would have to turn our main unit into loose housing we decided to introduce our gilts to this concept right away.

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stalled gilt crates for breeding. We quickly discovered after starting to use these crates that even with a short and narrower footprint they still left plenty of room for the gilts to move around. Usually this wouldn't be a big deal except that at the time of breeding when it made it difficult to maximize breeding

potential. That's because during breeding, gilts moved substantially, turned around the odd occasion and at times even lost artificial insemination (AI) rods.

Using some leftover steel we had available we designed a 'ghost gate' that could easily be placed behind the gilts while

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breeding them. The gates took maybe half an hour to an hour per gate to weld and cost less than \$50 a piece since we used leftover steel. They easily slide behind the gilts and can be kept there for the duration of the breeding to promote nose-to-nose contact as well as decrease the chances of the gilts in the common pen pulling the AI rods out of the gilts being serviced.

We are not limited in lock in points for the gate since it can go behind each side bar on the crate. So body length of the gilt is not an issue. The gates aren't very heavy and when not in use are stored above the crates for easy access when needed.

We feel this innovation improves productivity, profitability and working conditions. The innovation has been welcomed by our employees. It makes daily breeding significantly easier and with less frustration. Their attention can go towards the actual breeding of the gilts rather than keeping the loose house swine away from the penned animals.

The gate is shown in photos attached. A video of this in action can be found at: <https://youtu.be/PeOUhF0g32o>.

Isolation crate for loose housing system: Scott Hyshka, Production Manager, Sunterra Farms

Mountain Vista Farm is a 4,000 sow farm east of Drumheller, Alberta using competitive feeding shoulder stalls from 40-112 days gestation. The com-



petitive feeding poses concerns of animal wellbeing and lost productivity that can result from aggression. There also is the issue with lost space from animals pulled from the loose pens that would not be refilled. The idea of the sick pen or collapsible crate within the loose pen was created to help resolve these issues.

The collapsible crate is in every loose pen. The pen can be opened to house an animal that requires segregation for additional nutrition or to have refuge from aggression (photos 1, 2). If the pen is not needed it will remain folded up against the pen wall (photos 3, 4).

The benefits of this are that the isolated animal remains in the loose pen with her pen mates. This allows the sow to re-enter the group when fit. The pen being within the loose pen does not re-

quire additional space in the farm to be set aside for sick or poor sows.

Win in future years

“The Aherne Prize is a popular one for the industry and one that will be continued in future years,” says Ben Willing. “We hope that as producers see these prize-winning innovations this year that they will be encouraged to enter their innovations at Banff Pork Seminars in upcoming years.” ■



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Plenary Session 2, Part 1

The future of agriculture – challenges, threats, barriers and opportunities

By Terry Hockaday, Meristem

Global food and fiber production gets high marks for performance over the past several decades but it has some significant challenges ahead never before faced in history. If it is going to succeed in the future it is going to have to work in unprecedented unity and creative strategies.

That was the message technology consultant and writer Steve Savage had to delegates to the 2018 Banff Pork Seminar. Savage counts many leading companies among his clients and his writing is featured in leading publications such as Forbes Magazine.

Particularly positive for agriculture, he says, is that for the most part that production increase comes from per animal or per acre production increases rather than increasing the production area. While there are still definite limitations for developing countries the developed world enjoys an abundant, diverse and safe food supply that exceeds all historical precedents.



Steve Savage

Social license

Savage says major challenges are on the social license. That concept focuses on how societal pressures, permissions and perceptions influence the ability of an industry to succeed.

Agriculture's small population base reduces influence. There is declining overall investment in research and development. There is little appreciation of the historical value of science-based regulation, and regulation is influenced by politics and lack of harmonization.

There is widespread mistrust of the food system fueled by long-term marketing campaigns by industry segments or categories of technical rejection such as "No GMOs". Brand sensitive downstream food industry players are unwilling to support legitimate technology opportunities that are beneficial to producers and use their market leverage to protect brands and pursue market differentiation goals that conflict with options desirable for upstream players.

Some of those players use aggressive negative, often inaccurate descriptions of their competitors. They often supply funding for NGO groups that aggressively attack mainstream agriculture.

On top of that there are significant barriers to defense of social license. Disinformation by various groups such as ideologically-motivated activists representing extreme wings of environmental and animal rights movements.

Food demons and magical options have replaced considered analysis. Internet driven information has undermined trust in traditional authorities has people selecting information that only fits their food marketing has companies looking for product differentiation making implied or actual safety or ethical claims. And agriculture has developed silos rather than working together.

Opportunities

In spite of these challenges, threats and barriers there are real opportunities that need to be pursued by the diverse and critical industry upon which society depends for its food. Savage classifies those opportunities as "communications, confrontation and competition."

Communication opportunities. In recent years, more and more members of the farming community have stepped up as "advocates" by writing blogs, posting pictures and videos, being active on social media and speaking. Farm tours, ag tourism, ag in the classroom outreaches and various forms of direct marketing which give the consumer the opportunity to have some interaction with those who grow their food. There have also been a growing number of science and technology communication efforts involving academics, industry groups and individuals.

"These efforts to humanize the food production system are extremely useful for dispelling myths about 'industrial agriculture' and for generating more sympathy for grower needs," says Savage.

Confrontational strategies. The broader ag community, sympathetic skeptics, educators and the like, have also undertaken some more direct "myth busting" challenges to disinformation using humor, statistics, satire and the like.

Some companies have incorporated these approaches into their marketing. Other spokespeople have used editorial platforms in the mainstream press to call out examples of lies and deceptions. Other forms of pushback could be considered such as setting up and independent certification system that would steer consumers to products which don't involve misleading marketing.

One possibility would be a sort of a resource through which consumers could use to check the validity of marketing claims. Another would be to imitate the successful activist strategy of putting pressure on companies that are pursuing marketing strategies that translate into unreasonable demands or limitations of the actual producer community.

Competitive options. In recent years there have been a number of multi-stakeholder efforts to develop criteria and metrics for sustainability in agricultural systems. In theory these could have led to rational, science-based standards that could then be used to encourage best-practices by producers and signal consumers how they might “spend their food dollars” in a way which is socially and environmentally responsible.

The ideal of a consensus, “sustainable” certification has proven elusive.

One option might be for grower or basic producers to organize their own standard setting that reflects solid scientific input and also a rational understanding of economics and logistics for their specific sector. For instance, a baseline standard has been developed in the broiler chicken industry and could potentially be “branded” through a coordinated effort.

Another possibility would be for producers of multiple crops and animal products to develop their own alternative to organic.

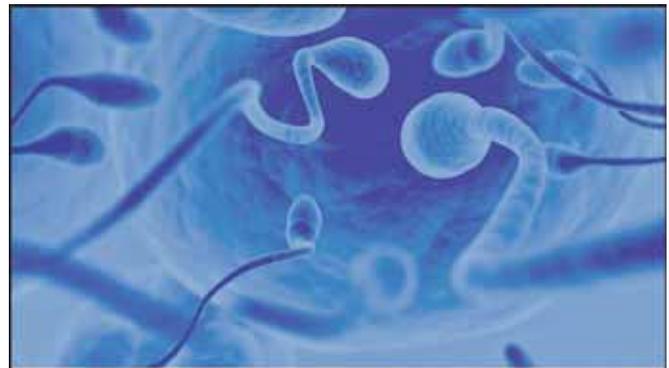
Many conventional crop and animal producers have adopted organic to gain a price premium or price stability, says Savage. While this is understandable, the goal of maintaining the long-term social license of agriculture is not well served by supporting a segment where some players essentially makes a false promise to consumers which makes them doubt the integrity of their mainstream option.

The grower/producer part of the value chain is not being adequately protected by public agencies that could have jurisdiction over food labeling claims. It is also clear that the downstream food companies and retailers have a vested interest in maintaining and increasing the presence of up-sell categories whether they represent any true advantage for the consumers. Even within commercial entities that include basic producers, the marketing side of the organization can be motivated to advance claims such as “non-GMO” that are not meaningful, but which can be counterproductive for those who actually produce food.

Unity, creativity needed

If current marketing trends continue, producers will risk losing the technologies they need and other erosions of their social license, says Savage.

The agricultural sector is highly divided by commodity and geography, and to a large extent it is made up of entities that compete with one another. If this sector is going to address the threats to its social license it is going to have to work together. ■



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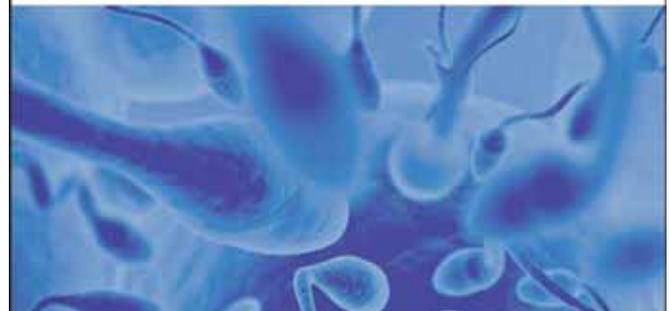
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Plenary Session 2, Part 2

The changing face of pork production

By Terry Hockaday, Meristem

When Ron Plain talks hog markets, people who make a living from those markets tend to listen.

The professor emeritus in the Department of Agricultural and Applied Economics at the University of Missouri-Columbia brings a farm background and solid experience in production economics to his presentations including a long history of industry service.

Plain has been a speaker at past Banff Pork Seminars and one that delegates rate highly. This year, in his Hog Market Outlook and Pricing Methods presentation to the 2018 Banff Pork Seminar, he looked at trends in the United States, Canada and globally and shared his insights on what may lie ahead for the hog sector.

Pricing

Negotiated sales for barrows and gilts, as well as for carcass weights, makes up only between two and three per cent of total sales, but has a longer reach than the numbers imply.

“This matters because those small numbers of negotiated sales drive the price for the rest of the industry,” says Plain. “Half



Ron Plain

the US barrows and gilts in the United States are priced based on a formula that is linked in one way or another to the negotiated price. Of all hogs under contract, approximately 60 per cent are under a price formula.

What difference does it make on price? Plain shared five-year data, 2013-2017, on both the base price for the hog and the net price after premiums and discounts to explain why negotiated sales continues to decline. “The price that those producers are getting for hogs is the lowest major category that is out there. It is a lot more work for negotiating but they are getting a lot less money for doing so.”

Plain shared his thoughts on a solution for the disparity. “In my opinion, the industry needs to move to pricing hogs based on the cutout value.”

Packing capacity

The percentage of packer owned hogs keeps increasing. Currently about 30 per cent of barrows and gilts raised for slaughter are packer owned and raised by the company that is going to slaughter them.

“They say hog producers can’t stand prosperity. They will just breed more gilts and expand production until the profits go away. Same thing appears to be true of hog packers – when they make money they start building more packing plants and eventually the profits are going to get squeezed for them too,” jokes Plain.

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But it appears there is some truth to his observation. While the trend is usually one new packing plant every 10 years, there will be three new, large plants built in three years – Sioux City, IA and Coldwater, MI opened in 2017 and plans to open one in Eagle Grove, IA in 2019 are in place.

Cost of production

Corn prices are cheap compared to recent history but will likely continue to increase. “Soybean and corn futures will give us a forecast cost of production for hogs – the last few years we have been looking at a low cost of production,” says Plain. 2017 saw the lowest cost of production since 2006 but the forecast is for an increase as feed costs rise and with the anticipation of a less desirable weather in the summer in the United States.

Productivity increases and evolution

Typically, the size of the swine herd is driven by last year’s profitability. Canada has seen a steady increase in hog inventory in the last few years. Canada’s export and import volumes remain steady and Canada and the United States continue to be each other’s strongest trading partners.

Plain believes there is going to be a steady to modest increase for hog slaughter in 2018 and into early 2019.

The value of continually evolving production practices can be seen in the continual increase in numbers for things such as pigs-per-litter, which show a long-term trending increase year-over-year in the last 80 or more years. The growth is slowing because biologically there is a limit to how far this can increase, so Plain says not to expect any rapid increases in this going forward.

However, there is room to grow according to Plain in areas such as pigs per sow. “U.S. pork producers are showing that they are getting better and better at what they do and are improving upon what their parents and grandparents did. So, there is a lot of upside potential.”

“Pork production per sow has seen a tremendous increase. In 1930, the average was 700 pounds of pork produced per sow

in the United States. Last year we averaged 4,500 pounds of pork per sow. I think there is every reason to expect that this will continue to move higher.”

“We produced more pork in 1999 than any other year in the century. In 1999, we had the fewest number of sows in 100 years. This is because the American and Canadian pork producers are much better than they were last year or a year ago. The challenge is that numbers indicate you are going to have be better again next year because the competition keeps getting tougher.”

Overall there is a significant increase of about 5.3 per cent forecast for U.S. pork production in 2017-2018 which is the largest increase among the animal proteins.

Demand

Meat demand increases as the world population rises and is impacted by how well the economy is doing. When people have jobs and are making money, they buy more meat.

U.S. meat production for beef and pork in past years has climbed steadily each year, and turkey is fairly stable. Broilers continue to have steady and predictable growth. “I remember forecasting chicken production in the states and learning three things in life are certain- death taxes and three per cent more chicken than we had last year,” says Plain.

An interesting outcome of the 2014 PED outbreak was a large increase to the average slaughter weights. Pork producers tried to increase the weights to accommodate the volume shortfall. “The average slaughter weights continue to rise and increase by about a pound per year – expect that to continue.”

Bacon demand is steering cutout values, and has been for the last few years. “Bacon is the new ‘in’ food both at home and in foodservice,” says Plain.

World pork trade – the amount of pork moving between countries – is fairly stable with slight increases in the last few years expected to continue. ■

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Breakout Session 6: Sow lifetime productivity

By Bryan Passifume

While lameness is a problem across a wide spectrum of livestock, the issues surrounding swine-specific lameness is unique. Lameness impacts milk production, animal productivity, and a farm's bottom line. Zinpro Corporation's Mark Wilson put his best foot forward in discussing research and trials into stamping out lameness for good.

In terms of getting the most out of each litter, Michael Dyck of the University of Alberta talks of how fertility and the latest artificial insemination techniques can help swine breeders do more with less.

Part one - Impacts of lameness, longevity, and inflammation

Along with age, reproductive failure and problems getting around, lameness is among the leading causes of sow culling in today's sow herds. The answer to what causes a sow to go lame is complex and multi-layered, says Mark Wilson of Zinpro Corporation.

"Poor skeletal structure, claw lesions, inferior environmental conditions, diseases such as osteochondrosis or mycoplasma hyosynoviae, and improper handling all are potential contributors to lameness," he explains.

With cull numbers rising on American farms, loss of productivity and viability is becoming a real concern for producers.

"The lack of gilts making it to at least parity three creates challenges in maintaining breeding target numbers," Wilson explained.

"A common on-farm approach is to either increase the number of gilts selected or keep lower productivity sows to meet the breeding target."

Always introducing replacement gilts brings risks of its own - namely compromising herd health as the possibility of introducing illness increases with every outside animal brought into the facility.

As well, piglets tend to fare better from experienced sows compared to gilts.

Build the horn

Wilson advises that decreasing instances of lameness in sow herds lies in encouraging healthy horn production.

To that end, he outlined several strategies for producers to ensure a well-hoofed herd - including the outcome of a number of research trials involving the impact of dietary minerals on horn and claw production, as well as specific types of epithelial tissues.

The challenges that lameness present to producers are somewhat unique to swine producers. Unlike with larger animals like cattle, identifying and determining lameness issues aren't always as easy out with pigs.

"For the swine producer, identifying lameness requires careful observation," Wilson explained.

"Deviations in locomotion such as head-bobbing, throwing shoulders or hips in a twisting motion, and refusal to stand or put weight on a foot are symptoms of lameness."

The effects of lame sows are felt right down the line, causing everything from decreased milk production to poor piglet performance.

CONTINUED ON PAGE 42

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Wilson referenced a University of Georgia study on the impact, if any, claw-trimming had on cases of swine locomotion as compared to horses and cattle.

Trimming their claws to 5.5 cm from the coronary band, the gaits of 52 sows were analyzed via high-speed video cameras before, immediately after, and in the 48-hours after trimming.

“Positive changes in gait included a decrease in swing and stride duration, as well as break over, and increased swing-to-stance ratio and velocity,” Wilson noted.

A second study was also carried out, investigating the financial benefit of trimming.

“Three hundred and eighty sows per treatment were farrowed, showing a 0.4 pig increase in pigs born alive in the second farrowing, and a 0.6 pig increase after the third farrowing for sows that were trimmed versus not-trimmed,” he explained.

Mineral benefits

In terms of diet, studies have shown carefully balancing mineral intake can have a positive impact on hoof health.

Data from 15 separate farm studies, Wilson explained, showed a diet that includes zinc, manganese, and copper amino acid

complexes reduce instances of lameness and claw lesions.

Inflammation is also a key culprit in horn health, which can also be counteracted and controlled through dietary minerals.

Benefits can also be seen in swine gut health and immune systems, illustrated in studies that have shown noticeable benefits.

“A series of growing-phase swine experiments conducted at Iowa State University showed that zinc amino acid complex has a very different response than zinc sulfate on barrier function, epithelial integrity, anatomical and histological damage of the villi, and gut leakage, due to acute heat stress,” Wilson said, explaining that zinc amino acid complex present increased immune competency compared to zinc sulfate.

Blood glucose also tended to rise with zinc amino acid complex mineral consumption, relative to inorganic minerals.

Longevity

In terms of economic viability, most models suggest little value in farrowing sows beyond their fifth litter – an operating philosophy endorsed by Dr. John Deen from the University of Minnesota, who maintains the importance of managing herds based on measuring animals remaining through early parities than averages based on the entire herd.

Wilson explained that the ideal profitability range percentages should be between 40 and 45 per cent, “however, many high-producing systems are above a 55 per cent replacement rate,” he said.

“When consideration is given to the impact of gilt progeny, compared to sow progeny, there is an advantage in mortality, morbidity, birth weight, growth rate, and feed efficiency for piglets born and nursed by second to fifth parity sows,” he said, adding that growth differences from gilt offspring has been noted anywhere from seven to as high as 17 per cent.

“The differences in amounts of immunoglobulin in colostrum and milk may partially explain the sow over gilt advantage, and additional research has shown that piglets born to gilts are lighter at birth compared to piglets born to multiparous sows.”

Don't ignore lameness

It doesn't pay for producers to merely disregard sow lameness. Wilson explained.

Careful herd monitoring – along with the introduction of amino acid complex minerals – can go a long way to ensuring sows are happy, healthy and capable of contributing to overall economic viability and needless culling of otherwise productive animals.

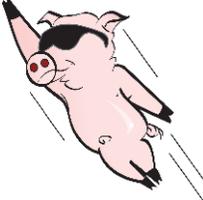




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Part two - Artificial insemination management to optimize sow productivity

While fewer innovations have had a greater impact on swine genetics over the decades than artificial insemination (AI), production efficiency is largely dependent on what the boars bring to the table. The quality of genetics contributed by the boars goes a long way to determining the quality of the offspring. All that aside, sound breeding management practices can also have a huge impact on AI outcome, explained Michael Dyck, associate professor at the University of Alberta.

“Effective prediction of relative boar fertility is essential and will allow for the early removal of less reproductively efficient boars from commercial studs,” he said.

“This, in turn, will optimize the use of proven, high fertility boars with high genetic value at lower sperm numbers per AI dose.”

Also important are identifying and excluding low-fertility, low-performance boars from stud herds.

That, he explained, allows for noticeable improvements in production efficiency by taking advantage of desirable traits on boars such as growth rates, feed conversion, and carcass characteristics.

Assessing boar fertility

Determining fertility from a given sperm sample is deceptively difficult, Dyck explained.

“Laboratory assays often examine all of the sperm present in a sample for fertility, yet only 30 or so sperm are necessary to fertilize all available oocytes,” he said, pointing to a 2001 study suggesting the sperm cells actually responsible for fertilization may not reflect the fertility of the entire semen sample when tested.

A similar paper published two years later postulated that building an accurate picture of fertility would actually involve testing sperm attributes – ones identified as best impacting fertility and embryonic development – across a large, heterogenous sample area.

“Nevertheless, the markers of relative fertility selected must ultimately predict the relative fertility of boars when using low sperm doses of extended semen for AI,” he said.

Determining male fertility – especially in the highly-demanding environment presented by artificial insemination requires careful analysis of two key traits.

Compensable: These traits include motility and morphology – problems that can be overcome by introducing large numbers of sperm during insemination.

Uncompensable: Conversely, this refers to defects in sperm that impact fertility and embryo development that cannot be overcome through sheer numbers. These include nuclear vacuoles, issues with DNA structure, and morphological problems that don't impact fertility.

Dyck said conventional semen evaluation methods, which measure seminal volume and concentration, as well as a percentage of motile normal-looking sperm cells, don't necessarily indicate how fertile a boar is.

Structural chromosome abnormalities also play a role in fertility, he said – pointing to a 2016 study that found 1.64 per cent of boars in Canada's commercial swine herd were carriers of such abnormalities.

That translates to about 12 out of every 732 boars.

“These carrier boars consistently showed lower fertility values, with the total number of piglets born for litters from carrier boars was between four and 46 per cent lower than the herd average,” Dyck said.

“They also found that carrier boars produced litters with a total number of piglets born alive that was between six and

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Best and brightest

Not only is it important to ensure only the best genetics make it through to the next generation, prudent use of advanced artificial insemination technologies can push up those success rates even further.

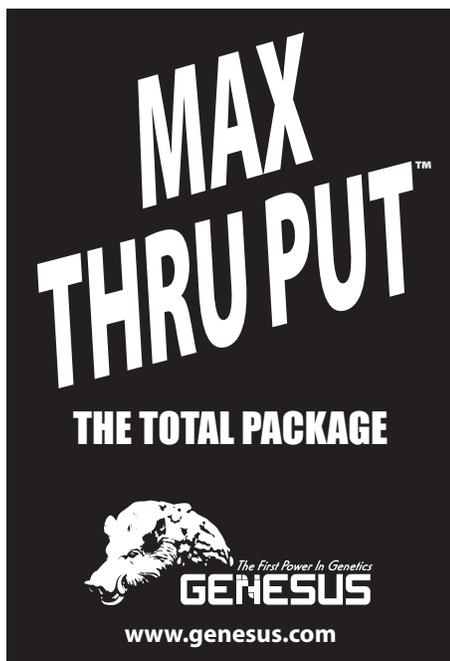
One such innovation that's shown to increase insemination efficiency is post-cervical AI (PCAI.) By introducing ejaculate directly into the sow's uterus, this technique allows for reduced sperm amounts per session without impairing reproductive performance – initially one billion, but subsequent development reduced that number by half and later by a third.

Increasing AI efficiency, as well as ensuring only the most superior boars are used for ongoing reproduction programs, only makes sense, Dyck explained.

“The characterization of AI boars that maintain high productivity at even lower numbers of sperm per AI dose then allows the industry to capitalize on established and emerging AI technologies like post-cervical, and single, fixed-time insemination,” he said.

“These changes would be made without any loss in productivity, as measured in terms of pigs born per sow per year.”

That not only makes the best use of available resources, it ensures increased productivity and economic value in future generations. ■



Breakout Session 7: Swine health and antibiotics

By Scott Archer, Alberta Pork

Part one – Canada's Industry and Regulatory Framework: An ongoing policy initiative to enhance responsible use of Veterinary Antimicrobials with Dr. Egan Brockhoff

Consumers continue to demand more and more from the farmers who produce their food. As infections are growing in resistance to antibiotic use for human health, public concern over meat has grown with the use of antimicrobials grows as well. This antimicrobial resistance is a global problem that the world has come to recognize and is working to change. Egan Brockhoff says industry should start looking beyond animal health and welfare and toward food security and public health when considering antimicrobial resistance.

By government standards, regulatory response to this issue has been fairly quick. Health Canada began engagement and consultation with stakeholders, including the Canadian pork industry, in 2014. These consultations resulted in the release of the Pan-Canadian Framework on AMR, Canada Gazette II – amendments to the Food and Drug Regulations, the Federal Framework on Antimicrobial Resistance and Use in Canada, and the Action plan on Antimicrobial Resistance and Use in Canada. In this approach, Health Canada has identified six policy pillars that will create changes in antimicrobial oversight.

1. Own Use Importation

The first pillar is the increasing oversight on Own Use Importation (OUI) of veterinary drugs. Dr. Brockhoff says that the pork industry hasn't been a significant user of OUI. Certain drugs will still be available for importation, but an industry-wide application must be made by a livestock association to the Veterinary Drug Directorate (VDD) – individual producers cannot submit directly to the VDD. Health Canada has created a product list referred to as List B, which are the types of products eligible to be imported. Products on List B must fit these criteria:

- Is not a prescription drug for veterinary use in Canada;
- Is in its final dosage form and within its commercial packaging;

- Is not a medicated premix;
- Is approved by a recognized foreign regulator;
- Has an established MRL in Canada for the active ingredient and species;
- Has similar directions for use as a product approved in Canada with a DIN;
- Has no unresolved safety issues.

2. Growth Promotion Claims

The second pillar is the removal of growth promotion and weight gain claims. This is meant to eliminate unnecessary usage of medically important antimicrobials in animals. Manufacturers have been working with Health Canada through this process to ensure no products will be lost to Canadian veterinarians and producers.

3. Increased Veterinary Oversight

Dr. Brockhoff says that veterinarians are a critical part of monitoring prescription use. As such, Health Canada's third pillar is to move all medically important antimicrobials (MIAs) to prescription status through the Prescription Drug List (PDL). This will impact approximately 340 products, including 75 in-feed MIAs. This will come into effect on December 1, 2018.

4. Sales Tracking System

Health Canada's fourth policy pillar is to introduce mandatory reporting of antimicrobial sales volume. This will begin on March 31, 2019, when all sales data from the previous year must be reported. This will be mandatory for importers, manufacturers and compounders.

5. Veterinary Active Pharmaceutical Ingredients

Active pharmaceutical ingredients (API) usage in food products is unique to Canada among other developed countries.

Starting May 17, 2018, all APIs must follow the Good Manufacturing Practices (GMP) used in human medicine. Manufacturers must also have a Drug Establishment License (DEL).

6. Veterinary Health Products

Probiotics and other low-risk health products that can be put into livestock and livestock feed that will now be monitored. These low-risk Veterinary Health Products (VHP) are permitted to say they may "maintain or promote health and welfare of" a particular animal. They cannot be marketed as a treatment or cure for disease.

The Canadian Pork Council (CPC) developed a new drug use policy to reflect these ongoing regulations. The policy includes restrictions over using Class I antimicrobials (Classes I, II, and III are all medically important for human health). Access to antimicrobials remains intact, Brockhoff and the CPC have been working to ensure that, but there will be restrictions, especially on using antimicrobials for growth promotion. But when it comes to ensuring safe, healthy, and ethical pork production, antimicrobials may continue to play their part.

Part two - Raised Without Antibiotics, analyzing impact to biologic and economic performance with Clayton Johnson

Since their discovery, antibiotics have proven to be indispensable for both human and animal medicine. Modern animal agriculture has been built around the readily available use of antibiotics, reducing mortality while improving animal well-being, caloric conversion and growth.

As Brockhoff touched on in his presentation, all antibiotic

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use contributes to antibiotic resistance. Because of this, the public has become increasingly concerned about the potential for animal agriculture to contribute to this resistance and causing proliferation of antibiotic resistant diseases. Johnson says that the scientific community has yet to settle on a consensus for this issue of antibiotic resistance, but the reality is that the public wants animal agriculture to reduce reliance on antibiotics. Furthermore, Raised Without Antibiotics (RWA) programs have been developed in an effort to reward pork producers that raise their herd without exposure to antibiotics. Johnson gave the American perspective on these programs, and their effects on cost of production and revenue generation.

Estimating RWA cost impact

Johnson reviewed several published papers that describe RWA program impacts on cost of production. These cost estimates can provide the industry with some general guidelines which producers should find useful in evaluating the value of RWA for their herds. One of the papers Johnson reviewed found a \$4.40/CWT cost increase after adopting a RWA program. Another paper found an increase cost of production by between 14 per cent and 21 per cent. The increased cost of production in these models was primarily driven by a reduction in nursery average daily gain, caloric conversion efficiency, and mortality. Both cases found mortality rates to have the biggest effect on production cost increases due to RWA programs.

Johnson says revenue impacts will be the easiest way for a producer to calculate the value of adopting a RWA program. Assessing the revenue impact will be specific to each producer and program. Most producers with high health herds can market 75-85 per cent of pigs weaned into an RWA market with the remaining 15-25 per cent not meeting RWA specifications at the time of marketing. It's

important that producers review packer demand for the program, and any periodic decrease in demand should be calculated into revenue estimates.

Partial budgets

To see if a RWA program is right for your operation, Johnson suggests that producers should create a "partial budget," based on the finances that will be affected through these RWA programs (ignoring costs and revenues that will go on unchanged). To create a partial budget, consider the revenue and cost impacts discussed earlier. Put together your potential added income (packer pricing for RWA, percentage of herd available) and potential reduced costs (reduced medication expenses). Next, put together your added costs (like increased feed) and reduced income (like mortality rates, market availability). When you have these two figures, you can subtract your increased costs/reduced income value from the added income/reduced cost value. From there, you can arrive at a projected return on the adoption of a RWA program on your farm. A negative number indicates the change may reduce profits. A positive number indicates that the change may increase profits.

Other considerations

Losing or reducing access to antibiotics will require veterinarians to improve management of non-infectious disease. Technology could be used to rapidly identify disease and avoid antibiotic use in inappropriate cases.

Successful RWA programs will require collaboration between veterinarians, nutritionists and geneticists. They will need to develop programs must be developed to supplement the existing disciplines which have been rigidly defined over the last 50 years. Johnson says that "the true leaders in health management in a world of limited antibiotic access will be those who best understand the complex interactions of genotype and environment.

Part three - Transition to antibiotic-free: tips and tricks with Greg Wideman

A common thread throughout this breakout session was a recognition of the growing concern over the impact on antimicrobial resistance due to animal agriculture. Wideman and South West Ontario Veterinary Services are attempting to find a way to increase antibiotic-free pigs while maintaining the performance and mortality rates at the level of conventional pigs.

Wideman provides a list of priority issues to help focus on the biggest barriers to a transition to antibiotic-free pigs.

Measurement and review of biological and economic performance is a standard operating procedure for most pork producers. This review is especially critical during transitions away from antibiotics. Changes to performance could potentially jeopardize the sustainability for the farm if not addressed quickly. Proper performance monitoring can cut down on valuable response time.

Wideman lists some key attributes of a good data management and performance monitoring system:

- Minimal or no requirement for duplicate data entry, simplicity;
- Accurate, with logical calculations, and high-quality data input;
- Web-based, no additional software required for the whole production team to review;
- Batch or time-period closeouts to track changes in performance relative to health program/nutrition/management changes;
- Robust inventory tracking to follow 'treated' and 'program'

pigs within a single batch or group;

- Allow for accurate benchmarking within a system and between systems if appropriate.

Elimination and control of critical diseases is essential in antibiotic-free pig production. PRRS virus is the biggest driver of antibiotic use, making the transition away from antibiotics more difficult. Mycoplasma hyopneumonia (Mh) also makes transition difficult. Wideman strongly suggests eliminating PRRS and Mh from breeding herds before transitioning. This can often be accomplished at the same time, which strengthens the economic considerations. Other bugs and pathogens will present challenges for producers making the shift to antibiotic-free, but proper planning can take care of these bugs before they become an issue.

Of course, the best way to manage a new pathogen is to ensure that it never arrives at the farm in the first place! Biosecurity needs to be strengthened to make the transition to antibiotic-free production viable.

Weaning age is a critical point for some bacterial pathogens, making antibiotic-free production either unsustainable from a productivity point of view, or unethical, from the pigs' point of view.

Streptococcus suis infection in the nursery has been demonstrated to be significantly easier to manage with older weaned pigs.

Sustained management effort, focus and fine-tuning, according to Wideman, is a requirement for successful antibiotic-free production. This includes daily management, auditing, and reviewing of these areas:

- Colostrum management to control early infections;
- Foster protocols to minimize disease transmission in the farrowing room;

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- Water quality and treatment to minimize infectious pressure from contaminated water supply or equipment, and to maximize water intake.

Wideman says that the key ingredient that can tie together this antibiotic-free system is communication. All collected data needs to be shared to the sow herd managers to fully

understand the impact of changes on the system. When used effectively, a policy of regular communication, feedback, and teamwork can resolve new and unexpected issues. Ultimately, this system can work to prevent productivity problems from going unchallenged for too long in the antibiotic-free farm. ■

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Closing Plenary I'm Farming and I grow it - An AgVocating Success Story

Trust, transparency and vulnerability are essential to telling our story

By Terry Hockaday, Meristem

Agricultural producers know in today's world they need to reach consumers.

Greg Peterson talks to millions of them. Literally.

In what surely ranks as one of the most successful social media programs in agriculture anywhere in the world, millennial Peterson and his young, energetic farming brothers use creativity, humor and confidence to tell the story of modern agriculture. It has been more successful than even they could have imagined when they started out.



Greg Peterson

The advocacy challenge

Agricultural advocacy has become increasingly important over the last few decades, Peterson told delegates to the 2018 Banff Pork Seminar in Banff, Alta. The number of people involved in production agriculture continues to shrink and the percentage of the population who grew up on a farm becomes lower each year.

"As part of the millennial generation, my brothers and I have grown up surrounded by many who know nothing of what farming is and who farmers are," he says. "We have spent much of our lives attempting to address misconceptions and defy stereotypes of what it means to be a modern-day farmer. Only recently did our idea to start making music videos on YouTube take what we'd tried to accomplish with the people around us to the masses."

Over the last five years, Peterson and his brothers have stumbled upon a communication platform that gives us a wider reach than anyone could have predicted. Their YouTube videos have been seen over 50 million times in more than 200 countries. Their daily Facebook post interaction frequently eclipses 500,000 people.

Many of these people do not come from agricultural backgrounds, he says. "Teachers have been able to use our videos

in schools around the world, even in urban areas. The humor and relatable content found in our videos is what drives our success and the popular songs we parody are the bridge we use to drive people from urban areas to our channel.”

The new era

Ten years ago, much of what we can do on social media today was not possible. Smart phones have given us the ability to capture what we are doing on the farm and broadcast it to thousands of people at the click of a button, all from the seat of a tractor or wireless internet in our homes. At no time in history has such a powerful communication tool made reaching large groups of people so accessible.

Unfortunately, this surge in communication has led to a frustrating amount of misinformation being shared as well, says Peterson. Simple google searches of modern day agricultural technology result in overt negativity toward farmers and the agricultural industry.

“My brothers and I have realized over the years that not only should we be showing what farming looks like and what farmers do in our videos, we need to be prepared to answer the tough, controversial questions that people have about the technology farmers use.”

Building trust

After watching these videos, people often have questions about farming practices, says Peterson “There is a sense of trust and credibility that is built after watching our family have fun together. This trust and credibility allows us to answer these questions with honesty and candor. It opens up a valuable opportunity to share with millions of people why farmers use the technology they do.

“Without that trust, many will reject information about tools such as GMOs, pesticides, preventative animal medicine and feed additives before they are even explained. We believe building trust is as big a part of advocacy as presenting the information.

“As we enter into the future of agriculture and advocating for what we do, we must remember that trust, transparency, and vulnerability is essential to telling our story. The need to advocate has never been clearer and will continue to increase. Each and every person in the industry needs to be prepared to share answers to hard questions. Social media and new technology allow us to do this in ways not possible in the past. Although the battle to educate may never end, we must not give up the conversation.” ■



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