Following Through On A Vision
10 Year Anniversary Edition
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Welcome To Benchmark 2015

The Power of PigCHAMP Data To Propel The Industry Forward
Mary Feldskov

Building Innovation Into What We Do - Everyday
Lee Whittington

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The 2015 edition of Benchmark Magazine marks the tenth anniversary of this publication. The seed of the vision of this publication was planted by former Farms.com president, Doug Maus. When Farms.com purchased the rights to the PigCHAMP software in 2002, Doug not only saw the value of the PigCHAMP brand that continues to represent the world’s most widely acclaimed swine management software, but he also saw the inherent value of the benchmarking database that was first initiated at the University of Minnesota several years prior. Doug saw this as an asset not only for the pork producers who participate in the PigCHAMP Benchmarking program, but also the value that this collective data set can provide to the industry as a whole. Sharing this information broadly and providing a forum for thoughtful analysis and discussion of related topics was, and still is the mission of Benchmark. Doug passed away suddenly in 2006, and although he was only able to see the first issue of Benchmark in 2006, the leadership and foresight he exhibited is honored with the theme for this edition “Following Through On A Vision”.

We have been fortunate over the years to publish work from industry-leading authors representing research, academia, allied industry and production systems. This edition is no different. With articles ranging from a review of the last 10 years of benchmarking data by Dr. John Mabry, insight on promising research, a look into the future of swine production education, a perspective of the exploding market in China from the inside, and more, we believe you will find this issue the most interesting and informative to date.

As always, we would like to offer a sincere thanks to our contributors, advisors, advertisers and everyone who has made Benchmark and invaluable resource for the past 10 years.

The PigCHAMP Benchmarking program is open to pork producers who share their production information. Participants receive free quarterly updates of how their operations compare to the Benchmark averages. PigCHAMP also offers in-depth customized reports for a modest fee. PigCHAMP is part of the Farms.com family of companies which strives to provide innovative information products and services to the global agriculture and food industries.

DOUG MAUS, 1956-2006

Doug was a successful, visionary entrepreneur. He founded M&F Livestock as a livestock brokerage company. As the Internet became a changing force in the business world, he joined forces with other entrepreneurs to create what would eventually become Farms.com. Doug served as President and CEO of Farms.com from 2001 to 2006. During his leadership, the company grew rapidly, with offices across North America serving thousands of customers.

Doug was a loving father to his four children. Doug loved to work hard and play hard. He was a life-long athlete, he played sports like he lived his life – combining his physical abilities and skills with a thoughtful approach to the game – he liked to win but he loved to play, compete and be with his teammates even more. Doug played hockey from an early age and continued playing a couple times a week with a close knit group of friends. Doug suffered his heart attack during his weekly hockey game with his friends.

Doug enjoyed golfing, though with his busy lifestyle he did not get out as often as he would have liked. He was fortunate to travel across North America and had the opportunity to play on numerous championship courses with business associates and at industry events. His friends will tell you he was a good golfer and that everyone enjoyed the good natured discussions that took place during the round.

As a child, Doug was surrounded by the livestock sector – in the later years, his focus was the swine sector. He was passionate, involved and well connected within the North American swine industry and loved to make new friends and share industry stories.

The Farms.com family knows that Doug would be proud of what this company has become. In addition to PigCHAMP, Farms.com now owns and operates leading job boards – AgCareers.com and CareersInFood.com, and has expanded online to include a number of offerings including used farm equipment. Though he passed away some time ago, his leadership is still part of the DNA of Farms.com.

www.PigCHAMP.com
Founded in 2005, Harrisvaccines is a global leader in animal vaccine technology, specializing in swine and other production animals.

Our goal is make sure livestock producers can protect their animals’ health in a timely manner, and we work hard at it. The results are evident in herds all over North America: faster, safer vaccines based on advanced molecular science, and the enhanced productivity that comes with healthier animals.

Today we have a USDA-licensed production facility located in the Iowa State University Research Park and our research teams are constantly on the hunt for new breakthroughs. Our growth since 2005—from startup to global leader—is proof that we’re achieving these breakthroughs for the benefit of livestock producers everywhere.
Across the globe, PigCHAMP databases house records on millions of animals. On the farm, managers use this information to make daily management decisions – to breed or to cull? To retain or to sell? Analysis of cumulative data helps managers with long-term business planning and decision making. Users of PigCHAMP software have come to rely on this data to manage their day-to-day operations, to grow their farm businesses and to keep their animals healthy.

For more than 10 years, PigCHAMP Benchmarking has tracked the data of more than 1 million sows from over 500 farms in Canada, the US and globally, allowing individual farms to compare their production data against other farms. Quarterly and annual reports are sent directly to each participating business, and the results are tabulated and recorded in our annual Benchmark magazine – you can see this year’s results, and a summary of the past 10 years, on pages 15-19 and on the PigCHAMP website, pigchamp.com. The annual Benchmarking program is another tool for farmers to make the most of the vast quantity of data that is collected using PigCHAMP software.

“Analysis of the data that is collected in PigCHAMP databases can be used in many ways to propel the global hog production industry forward.”

The aggregate data that PigCHAMP gathers has value beyond the farm. Through partnership with academia, organizations and agri-business, analysis of the data that is collected in PigCHAMP databases can be used in many ways to propel the global hog production industry forward.

In last year’s Benchmark Magazine, we brought you an article about the introduction of JBS United Animal Health’s new product, OvuGel® - a FDA licensed gel formulation containing a GnRH-analogue. OvuGel® is the first product approved for synchronizing ovulation followed by a single fixed-time AI in weaned sows. In conventional breeding programs, weaned sows are bred after observing for standing estrus. The time to return to standing estrus following weaning is a variable that depends upon a number of factors such as the overall health of the animal, genetics and season. As a result, staff must heat check animals daily and breed accordingly in the 7 days that follow weaning. In the JBS United’s Animal Health OvuGel® trials, all sows were treated with OvuGel® 96 hours after weaning and subsequently inseminating 24 hours later with a single dose of semen – whether or not estrus was detected. In their studies, they found that for every 100 weaned sows, approximately 3-4 more sows were pregnant using fixed time AI – due to the fact that sows were bred that would otherwise have not been, since they had been mated regardless of the expression of estrus. The article, and the accompanying research data, described how the use of OvuGel® and single fixed-time artificial insemination can have significant impacts on the farm: pigs per semen dose will be significantly greater; reduced labor costs; impacts on genetic improvement; and reduced piglet variation were among the outcomes that JBS United research had identified. (To read the full article in the 2014 Benchmark Magazine, visit www.pigchamp.com/benchmark-magazine)

In the year that has followed, JBS United Animal Health continued to research and review new farm data after product launch. For many of these farm trials, data was collected in a number of different software management programs. They frequently found it difficult to extract data in a meaningful way that allowed for further detailed analysis – without significant staff hours spent manually extracting data and entering it into Microsoft Excel spreadsheets. That was until Chris Eden, a member of JBS United’s Technical Services Team, ran into PigCHAMP’s Jayne Jackson at an industry event and told her about the challenges they were facing getting the data they were collecting out of the various software programs.

“PigCHAMP has always strived to be as flexible and accommodating as possible to meet the needs of our customers and our industry,” says Jackson. “When Chris Eden came to us with a problem, we knew we could find a solution.”

Working with Jackson and the PigCHAMP team, Eden was able to import data from other software programs into the PigCHAMP program, and customized reports were created that gave him the data and information that he needed to further analyze the information collected during the OvuGel® trials.

In the original pre-launch licensing trials, JBS United Animal Health observed sows for signs of heat during the application of OvuGel® application and subsequent single fixed-time AI. However the focus was to evaluate the impact of the entire breeding eligible pool. When segregating the two populations of sows, heat vs no heat, one can see impact on the overall population. “It was like a light-bulb came on,” says Dr. Charlie Francisco, Director of Technical Services. Upon further analysis, they now recommend that staff observe for heat Day 5, the time of single-fixed time insemination – and sows that are not observed in standing estrus should continue to be monitored and receive another service on Day 7, 8 and thereafter if heat is detected. These “opportunity sows” may be serviced a second time if they are found in heat up through pregnancy detection. Conversely, sows that did not exhibit heat throughout the process may still, in fact, be pregnant, and
should be checked for pregnancy before culling.

Keeping track of all this information makes for more sophisticated record keeping and the need for segregated data analysis. In addition to tracking signs of heat and OvuGel® application, variables such as parity, nutrition, genetics, and overall health of the animal are tracked and analyzed too. In this case, JBS United Animal Health recommends tracking two different populations – sows that are exhibiting heat during single fixed-time AI, and those that aren’t. “PigCHAMP software has the ability to identify treatments or responses, variables such as heat detected versus no heat detected, OvuGel® versus no OvuGel® treatment. Other record keeping systems have always been behind the 8-ball in that regard,” says Eden.

“JBS United Animal Health sees great value in the breadth and depth of data that is contained in PigCHAMP’s benchmarking database.”

Beyond the OvuGel® trials, JBS United Animal Health sees great value in the breadth and depth of data that is contained in PigCHAMP’s benchmarking database. They are working with Dr. Dennis DiPietre, a US-based swine economist to develop a forecasting model. Using the Benchmark data, a “virtual sow farm” will be created, and the impact of changes of various Key Performance Indicators can then be modeled. “The goal is to predict that if we change “x”, or change “y”, how does that compound and impact a farm over time,” say Eden. This project is still in its early stages, but Eden and his colleagues at JBS United Animal Health believe that the results could have a huge impact on the future financial well-being of sow farms.

### TABLE 1: Comparison of reproductive performance with Control and OvuGel®

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>OvuGel®</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weaned Sows</td>
<td>1479</td>
<td>1475</td>
<td>-</td>
</tr>
<tr>
<td>Sows Farrowed</td>
<td>1224</td>
<td>1239</td>
<td>-</td>
</tr>
<tr>
<td>Farrowing Rate (no. farrow/no. bred)</td>
<td>89.8</td>
<td>84.0</td>
<td>0.01</td>
</tr>
<tr>
<td>Farrowing Rate for Sows in Estrus on Day 5</td>
<td>89.9*</td>
<td>89.9</td>
<td>0.92</td>
</tr>
<tr>
<td>(no. farrow in estrus on day 5/no. in estrus on day 5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farrowing Rate for Sows Not in Estrus on Day 5</td>
<td>NA</td>
<td>29.0</td>
<td>-</td>
</tr>
<tr>
<td>(no. farrow not in estrus on day 5/no. not in estrus on day 5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weaned Sow Farrowing Rate (no. farrow/no. weaned)</td>
<td>82.8</td>
<td>84.0</td>
<td>0.41</td>
</tr>
<tr>
<td>Total Born</td>
<td>14.2</td>
<td>14.2</td>
<td>0.60</td>
</tr>
<tr>
<td>Born Alive</td>
<td>13.1</td>
<td>13.1</td>
<td>0.66</td>
</tr>
<tr>
<td>Total Born/Semen Dose</td>
<td>7.5</td>
<td>11.9</td>
<td>0.01</td>
</tr>
<tr>
<td>Live Pigs per 100 Sows</td>
<td>1081</td>
<td>1100</td>
<td>-</td>
</tr>
</tbody>
</table>

The data presented in this table are raw means. Sows farrowed spring and summer of 2013. * Includes all Controls in estrus on Day 7 or earlier. All OvuGel® sows were inseminated on Day 5.

### TABLE 2: Comparison of pregnancy rates with Control and OvuGel®

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>OvuGel®</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weaned Sows</td>
<td>1479</td>
<td>1475</td>
<td>-</td>
</tr>
<tr>
<td>% in Estrus</td>
<td>92.2</td>
<td>90.2</td>
<td>-</td>
</tr>
<tr>
<td>% Inseminated by 7 days Post-Weaning</td>
<td>92.2</td>
<td>100.0</td>
<td>-</td>
</tr>
<tr>
<td>Number of Inseminations</td>
<td>1.9</td>
<td>1.0</td>
<td>0.01</td>
</tr>
<tr>
<td>Sows Pregnant</td>
<td>1257</td>
<td>1261</td>
<td>-</td>
</tr>
<tr>
<td>Pregnancy Rate (no. pregnant/no. bred)</td>
<td>92.2</td>
<td>85.5</td>
<td>0.01</td>
</tr>
<tr>
<td>Pregnancy Rate for Sows in Estrus on Day 5 (no. pregnant in estrus on day 5/no. in estrus on day 5)</td>
<td>92.2*</td>
<td>91.2</td>
<td>0.46</td>
</tr>
<tr>
<td>Pregnancy Rate for Sows Not in Estrus on Day 5 (no. pregnant not in estrus on day 5/no. not in estrus on day 5)</td>
<td>NA</td>
<td>32.6</td>
<td>-</td>
</tr>
<tr>
<td>Weaned Sow Pregnancy Rate (no. pregnant/no. weaned)</td>
<td>85.0</td>
<td>85.5</td>
<td>0.68</td>
</tr>
</tbody>
</table>

The data presented in this table are raw means. Sows farrowed spring and summer of 2013. * Includes all Controls in estrus on Day 7 or earlier. All OvuGel® sows were inseminated on Day 5.
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FIND THE SWINE NEWS YOU ARE LOOKING FOR

www.Farms.com/Swine
At Prairie Swine Centre we start every meeting with a safety tip. Today’s safety tip is also an innovation – the deadstock mover. According to workplace research we should be careful when lifting anything greater than 15% of our body weight (source: Kansas State University), and the fewer steps we take carrying heavy objects the better. Sows die, sometimes in awkward places, and sows are much greater than 15% of any ‘group’ of people’s combined body weight. Various devices exist to assist this removal task, usually involving a rig similar to a bagged feed cart with a knuckle-breaker hand winch located inconveniently around the height of your shoulder. The photo below is an innovation developed by the production and maintenance staff at Prairie Swine Centre, instigated by Brian Andries our Operations Manager who has worked with pigs his entire career. Here is their low cost innovation to make light work of a job that needs to be done on all farms. The solution is in a word ‘elegant’ from its dependable components to its low cost manufacture, and it removes a health and safety risk associated with the job. How can we ensure more innovations like this are developed every month? I want to explore innovation in this article to see if we can indeed manage innovation.

The low-cost deadstock mover is an innovation using a pallet jack, rollers and an electric winch

What does it mean to be innovative? The word has become so overused in business press that it ceases to hold real meaning or excitement. For example, last year the word ‘Innovation’ appeared 33,528 times in quarterly and annual US corporate reports; in one 90 day period there were 225 books published with the word ‘innovation’ in the title; in a survey of 260 companies, 43% indicated they had a ‘chief innovation officer’ or equivalent position; 28% of business schools have added the word ‘innovation’ to their mission statement. Given the focus on innovation it should be all around us and contributing to improved businesses, better personal wellbeing and be part of virtually everything we touch. Yet many of our successful businesses, especially in manufacturing, have developed systems that engage the power of Standard Operating Procedures (SOP’s) and volume to drive down costs as a way to achieve profitability. Our farming model has also demonstrated that there are advantages to size. Our systems leverage their expertise by managing thousands (for example: acres or sows) in pursuit of a more efficient farm that meets family or shareholder needs for net income. Are ‘innovation’ and standardization opposites and in conflict?

Pork producers, transporters and packers want reliable, predictable processes that produce a well-defined product. For example; the pork chop of exactly 1 inch thick with colour scores of 4, a marbling score of 3, and drip loss of less than 7%. These specifications are expected to be the end result of; a genetics program that met reproductive goals; a herds person who weaned the target number of pigs that week; a feeding program that met budget; and lastly pre-market in-barn and transport handling care that resulted in low animal stress, with no bruising or demerits. Now repeat these actions exactly the same for 52 weeks of the year and you have defined the successful system for this particular end product. Throughout this description of a successful system the word innovation didn’t appear once, and yet where did the standardized systems come from? They were a product of trial and error, of research, of close observation and measurement – in short a series of ‘innovations’ built upon each other to develop our current ‘Best Practices’ and we then embraced these and made them our SOP across all barns and people engaged in producing our pig. Thus Innovation and standardization are related but the timeline between them is often long and the cause and effect often distant from each other.

In any business, predictability and the expectation of maintaining the status quo is difficult (remember the precise pork chop delivered exactly the same every day). Given that the pork chop scenario is true, desirable to meet market needs, and representative of millions of product and service interactions that take place every day of the year how can we manage and execute innovation? There are other challenges to innovation as well these are summed up succinctly in this quote;

“Innovation has a thousand enemies: inertia, ignorance, resistance to change, stupidity, etc, etc…if innovation were easy, more people would do it”
– Guy Kawasaki, Master the Art of Innovation

Where does innovation occur? So far in this article we have identified processes and products that lead to some tangible item – like our perfect pork chop. What about innovation beyond product research and development? Is it possible to have innovation elsewhere in the company, perhaps in human resources, staff meetings, or even accounting? Yes of course it is. Any area of business activity can identify best practices (the result of little innovations along the way) that result in improved processes and measurable results that move the
BUILDING INNOVATION - CONT’D

business closer to its goals. Innovation is not limited to things (like iPhones, or tablets) but can exist at the Enterprise level within the organization. For example, this spring PSC was presented with the Low Demerit Score award by achieving 96.57% demerit free market hogs. How we got there started a few years ago with reconfiguring a room for holding market animals, changes to flooring in the shipping room, and a focus on animal handling techniques. A series of innovations that resulted in excellent results for the end product, not to mention reduced frustration for staff, carcass quality premiums and reduced transit insurance costs. These are all good end products achieved by recognizing a need for change. In spite of having some success with various production innovations we are left with the question “How do we ‘turn on’ and capture innovation on our farm?” Is there an SOP for how to create, and execute innovation where and when we need it?

The issue is not that people are not creative; certainly they are, especially if encouraged and rewarded. The issue is not that we don’t appreciate the benefit of innovation; we have all seen opportunities to improve what we do (such as moving deadstock) and had at that moment had a flash of insight to innovate. The issue is how do we harness this innovative insight and make it serve the betterment of our farm business.

“Success can be found in taking a managed approach to innovation”

Picture the incandescent lightbulb – alas this potent symbol of innovation, used for decades to illustrate ‘bright ideas’ is itself being innovated out of existence. Replaced by a brighter idea that costs less to operate and has greater life expectancy, the LED light. Innovation is an ongoing and never ending process.

The experts in this field give us a few tips for being able to switch innovation ‘ON’in our business, and then more importantly taking action to follow through with the idea.

STEP #1

Do your own internal check by asking yourself and some of your staff and family:

• In your experience does innovation in your company improve net income?
• On a scale of 0-100 do you consider yourself innovative? (0 is not innovative at all, 100 is completely innovative in everything you do)
• Using the scale of 0-100 rate your business as innovative.

The InnovationOne group who pioneered this concept suggests their findings show (using a more detailed questionnaire than the three questions above) that businesses scoring below 70 have a random and incremental approach to innovation. What is interesting is that these same businesses score lower in net income and ability to differentiate their product in the marketplace, two very important metrics in business. These businesses are missing the rewards experienced by businesses that take a planned approach and embrace trying more radical innovations. The authors suggest having a planned approach to innovation.

STEP #2

Success can be found in taking a managed approach to innovation as suggested in the following six characteristics of innovative businesses:

• Leadership adopts an innovation strategy in the business and communicates it to all
• Engaging staff – they know the problems and may have creative ideas or solutions
• Develop a process for capturing these ideas and moving them forward – could be as simple as a white board in staff room that shows the challenges and potential innovations to deal with them
• Performance management systems need to provide incentives and encouragement for innovation
• Knowledge access and management – can our people access research and innovation relevant to their needs as part of their job?
• Provide resources (time, space, some budget) to support innovation

Looking for more motivation? If you are intrigued and want to think further about innovations in the pork industry go to the Prairie Swine Centre website (www.prairieswine.com) and see the top 10 innovations I saw at the 2014 Eurotier tradeshow in Germany. Some of these are ready for innovative Canadian farms to try. To really stretch your imagination the Hycare system from MS Schippers of the Netherlands seeks to use robotic warehouse technology to rethink managing the farrowing room. This short video on YouTube is a must see that will put innovation in pork production in a whole new light.

(pigchamp.com/pscinnovationvideo)

The Hycare sow management system at a tradeshow in Germany, October 2014. The focus on sanitation and bringing the sow to the herdperson provides a radical innovation in barn design and demonstrates significant improvements in piglet growth according to MS Schippers personnel.

LEE WHITTINGTON
BSc(Agr), MBA, PAg

Lee Whittington is President/CEO of Prairie Swine Centre, a non-profit swine research corporation, focused on practical solutions. Prairie Swine Centre is affiliated with the University of Saskatchewan and is located near Saskatoon, SK. Find out more at www.prairieswine.com.
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Porcine Epidemic Diarrhea virus (PEDv) was confirmed in the United States in May of 2013, and quickly spread across the swine industry. Sow farms affected experienced up to 100% mortality in baby pigs for three to four weeks on average before enough immunity had developed in the sow herd. Nurseries also experienced increased mortality as many of these piglets were weaned at a young age. Loose stools spread through the farrowing house as well as the breeding and gestation barns. Sows were also vomiting and off-feed. With so many sows weaned at one time to get piglets off of milk diets, breeding groups were completely chaotic. Some sows were not cycling very well which further complicated things. It was very clear to see all of these ways that PEDv devastates a sow herd, especially in the first month after becoming infected. What might not be so clear are the downstream effects that PEDv has on a sow farm when it comes to long term sow performance and subsequent litter performance. Many sows did not lactate for the normal three weeks. In fact, many sows did not lactate at all. There is still so much that is unknown about PEDv and how the animal is affected long term. The different PigCHAMP analysis tools and reports can help tease this information out of the records.

Many farms easily noticed a difference in reproductive performance immediately on the groups that were weaned and then bred during the beginning of the PEDv break and feedback period. For many farms, sows that were weaned and then bred during the few weeks immediately following the PEDv break had lower conception/farrowing rates and fewer total born per sow and pigs weaned per sow. Five farms broke with PEDv between February and May of 2014. The two following charts compare the two breeding weeks (in 2014) following the PEDv outbreak of the five farms to the same two breeding weeks of the previous year (in 2013). As you can see in chart 1, the two breeding weeks following the PEDv outbreak resulted in lower conception rates, with a difference ranging from 2.4–11.8% within the same farm.

Similarly, total born was also negatively impacted. Chart 2 shows the number of total pigs born per sow for the same breeding weeks used above. Again, all five farms showed a decrease in total born in the two breeding weeks following the PEDv outbreak.

In addition to lower production numbers during those breeding weeks, many farms ultimately culled a significant number of sows, especially younger parity sows from the groups that were weaned during the PEDv outbreak. The circulating virus in the farm affected some sows more than others, and a certain percentage of sows were not able to recover from the side effects. Of the five farms considered for this article, there were 224 parity one sows that were weaned during the PEDv outbreak. Twenty-two of these sows (9.8%) either died, or were culled without making it to their second litter. The majority of these sows were culled for either reproductive issues (mainly returns) or poor body condition.

The charts help illustrate the immediate effects of PEDv on reproductive performance, although most farms did not need to see charts to know how negatively affected these breeding groups were by the current health challenge. However, what the records and charts do help us analyze is if there are any long term effects on the sows after experiencing PEDv. It is well illustrated in scientific literature that a sow’s performance and management during her first lactation help set her up to be reproductively efficient for subsequent farrowings and her lifetime on the farm. Factors that positively influence a parity one animal include proper nutrition/ feed intake, lactation length, and total

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**CHART 1.** This chart illustrates the differences in conception rate on five different farms that experienced a PEDv break. The red column shows the conception rate for each farm for the two breeding weeks immediately following the PEDv outbreak. The blue column shows the conception rate for each farm for those same two breeding weeks of the previous year.
**EFFECTS OF PED - CONT’D**

**CHART 2.** This chart illustrates the difference in total born on five different farms that experienced a PEDv break. The red column shows the total born per sow for each farm for the two breeding weeks immediately following the PEDv outbreak. The blue column shows the total born per sow for the same two breeding weeks of the previous year.

Pigs nursed/weaned. So how are these sows (all parities) affected when they go off-feed during lactation from enteric disease, only nurse pigs for a few days if at all, and nurse very few pigs if any because of 100% pre-wean mortality?

While the answer is still being explored, reports available through PigCHAMP may help dig into this for each individual farm. Reports were run on the five farms previously mentioned above to look at total born for the whole farm on average since the PEDv break compared to the group of sows that were weaned within the three weeks following the PEDv break. That information is revealed in Chart 3. Since many of these sows have only farrowed 1-2 litters since the PEDv break, it is difficult to evaluate the lifelong effect of PEDv on these sows. However, on all five farms, the sows that were weaned in the three weeks following the PEDv break experienced a lower total born than the average for the sow herd as a whole.

As time continues and more subsequent farrowing information is available, the effect of PEDv on sows will be more evident. The reports so far suggest that PEDv does have a negative effect on sow performance not only immediately, but also for a sow’s lifetime on the farm. Even though PEDv is an enteric disease, it is important for the industry to consider the reproductive effects of this devastating virus.

“The reports so far suggest that PEDv does have a negative effect on sow performance not only immediately, but also for a sow’s lifetime on the farm”

Megan is a veterinarian at Rensselaer Swine Services in Rensselaer, Indiana. She attended North Carolina State University, where she graduated in 2006 with a Bachelor of Science degree in Animal Science, and a Doctor of Veterinary Medicine degree in 2010, where she focused on Food Animal Medicine. Megan is a member of the American Association of Swine Veterinarians (AASV) and the American Association of Bovine Practitioners (AABP). She is also an active Operation Main Street Speaker. Megan was honored as the “Young Swine Veterinarian of the Year” at the 2015 AASV annual meeting.

**CHART 3.** This chart illustrates the difference in total born for five farms that experienced a PEDv outbreak. The blue column represents the total born average for the farm as a whole since the PEDv outbreak. The red column represents the total born for the group of sows that were weaned within the three weeks following the PEDv outbreak for each farm.
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#WPX15
AN OVERVIEW OF THE LAST 10 YEARS OF BENCHMARKING DATA

Dr. John Mabry

This article is simply an overview of the last ten years of benchmarking data from the Pigchamp.com database of reproductive trait performance. Over a ten year period there is some change to be expected in the reproductive performance of swine herds in the USA. But just how much change is expected, and what has been seen in the data?

The data examined here consists of yearly averages (2004-2013) for the primary reproductive traits measured by producers using the Pigchamp sow management system software. These are yearly averages, so short term influences won’t be strongly evident. And the yearly averages are presented across all herds submitting data, and those in the top 10% and bottom 10%. My discussion will focus more on the yearly averages.

Readers should also realize that some of the traits examined are measures of reproductive performance (like farrowing rate), others are management decisions (like piglet age at weaning), and some are a bit of both (like repeat services). As a result we should consider all the potential reasons for variables to change over time as we analyze what has happened and what factors possibly caused these traits to change.

To start with, we fully expect there to be changes in these reproductive performance traits over time. The goal of most producers is to make improvement in these traits over time, and this improvement can be driven by a number of factors,

a) Genetic improvement by the genetic supplier: Each pork producer must get their replacement genetics from a genetic supplier, and each genetic supplier is making good faith efforts to improve the genetic merit of their product. In terms of reproduction, most genetic suppliers have focused primarily on improving litter size over the past ten years, and have made significant progress. Other reproductive traits that have been targets for genetic improvement include decreasing mortality in both the sows and piglets, decreasing wean to service interval, and increasing milking ability of the sow. Maternal lines have also seen significant improvements in growth rate, leanness and percent lean over the past ten years. But in so doing, both sow and piglet mortality has increased significantly in the pure line maternal populations.

b) Animal health challenges. Over the past ten years we have certainly seen various herd health challenges. But most have been chronic over time, with perhaps more losses due to challenges like PRRS seen in the later years than the early years. The dataset used for this article ended with 2013 data, a timeframe that predates the more severe impacts of the PED virus.

c) Normal aging of facilities: Over time, the facilities used for pig production will gradually degrade in the quality of environment that can be provided for the piglet. However, this should be a minor effect as we are looking only at a ten year time frame, and some new facilities will enter the data system as well.

d) Poorer performing farms exiting farrowing: Over a ten year time frame, there will be some production units that are not making an adequate profit to continue, and will most likely be performing at a below average level. However, this should be a small number of farms exiting.

e) Industry wide management changes: Over the past ten years we have seen some industry wide reproductive management changes, most of which should not have a negative effect on performance. This includes an increase in the use AI, and a trend towards group housing of sows during gestation.

f) Shorter term non-genetic factors: yearly economics like corn price extremes, market price extremes, and unusually high heat stress in summer have the potential to exert an impact on the reproductive performance.

g) Management quality: over the past ten years, the ability of our animal caretakers to exert a more positive influence on animal comfort and performance has likely improved. While not a major influence, should be a positive one.

FARROWING RATE AND % REPEAT SERVICES:

Over the past ten years we have seen farrowing rate increase from 77.7% to 84.9% on average (Chart 1). This +7% increase seems to be a steady improvement with only one year where farrowing rate regressed. This improvement is probably due to non-genetic factors, since this is not a trait in most seedstock company’s genetic improvement program. Perhaps this is due to better reproductive management, including better semen quality, better AI technique, and better replacement gilt management programs over the past ten years. The improvement seen in both the top and bottom 10% closely mirror that seen across all the herds.
But the improvement seen in the lower 10% is more variable, suggesting less control over this management influenced trait that others. It is interesting that while farrowing rate has increased, litters/sow/year (a closely related trait) does not appear to have seen a similar increase.

“It is interesting that while farrowing rate has increased, litters/sow/year (a closely related trait) does not appear to have seen a similar increase.”

Repeat services has seen a gradual decline over the past ten years, where the reduction in repeat service % is very close to the improvement seen in farrowing rate (6% vs 7%). There did appear to be a greater drop in repeat services in 2008 (seen in overall average and Upper 10%). This is perhaps due to 2008 being the first year where producers saw the price of corn increase dramatically (from $3.39 to $4.85 per bushel). With this sudden increase many producers did not give as many sows a second chance or repeat service.

LITTER SIZE:

There are several measures of litter size to consider: total born, stillborn, mummies, liveborn, liveborn/sow/year (Chart 2). Since this has been a major success in genetic improvement, significant improvement is expected in these traits. Both total born and live born have increased by 0.185 pigs/litter/year. This is slightly more than the average genetic improvement in breeding companies and suggests some non-genetic improvement also. It appears that the bottom 10% of producers for litter size in 2013 has just now reached the performance of the top 10% producers in 2004, about 10 years behind. The factors that increased farrowing rate should have had a similar positive effect on litter size. These increases in litter size have been accompanied by non-significant changes in stillborn and mummies per litter. However, as litter sizes have increased this will potentially create challenges for other reproductive traits. If the litter size in the sow exceeds her uterine capacity, then pig birth weight will decrease. This problem will exert its negative effect in pigs with birth weight below 1 kg (2.2 lbs) that have a resultant higher piglet mortality, and if they survive to weaning, have a much lower chance to make a profit when finished in our current wean-finish facilities. The increase in liveborn/female/year is the same percentage as the increase in liveborn, suggesting that litters/sow/year has stayed constant over our time frame.

LITTER WEANING TRAITS:

As litter size increases there is the probability that pre-weaning mortality will increase also. The data shows a small increase in pre-weaning mortality over the past ten years. This increase of 0.91% over the ten year period is much lower than the +18% liveborn pig increase. An increase in lactation length could also be a small factor in the increase in baby pig mortality, as the age at weaning has increased 2+ days over the past ten years. The driving factor here is probably producers that have moved to wean-finish barns where pigs’ performance is more sensitive to weaning weight. However, I would suspect most of this increase in piglet mortality will be found in the number of pigs with birth weights under 1 kilogram. With the increase in litter size greater than the increase in pre-weaning mortality, the number of pigs weaned per litter would be expected to increase, and it has greatly over the past ten years.
However, the pigs/weaned/litter does appear a bit larger than expected. The increase in pigs weaned/sow/year is similar to the increase in pigs weaned/litter, suggesting that litter size/sow/year has not changed significantly over the past ten years.

“The past ten years has shown significant improvements in most reproductive traits, most noticeably in farrowing rate and litter size.”

SOW REMOVAL TRAITS:
Sows generally exit the herd either on a voluntary basis (% culled/year) on an involuntary basis (% sow deaths/year). Reasons for sow culling are almost always related to having a litter or not (failure to conceive, failure to farrow, failure to recycle). This usually is much larger than the sow mortality rate, and that is the case here. The percent of sows culled per year was generally in the mid-40% range over most years. However, in 2005 and 2006 this culling rate was higher than other years. These two years were also very high profit years, so perhaps producers felt they could justifying culling marginal sows since their profits were high. In the late 2000’s data was publicized that showed the cost of voluntary culling sows was much more than the reproductive trait component. This research showed that market hogs from first parity sows made significantly less profit than market hogs from more mature sows. As a result, many in the industry were more hesitant to voluntarily cull marginal sows, resulting in a steady culling % for the latter years of the ten year period examined here. Sow mortality rates have increased slightly over the past ten years. This is likely a function of our success in making sows have larger litters while being leaner. Selection towards these extremes most likely reduces fitness, with an expected slight increase in sow mortality rate.

SUMMARY:
The past ten years has shown significant improvements in most reproductive traits, most noticeably in farrowing rate and litter size. While the increase in litter size is primarily due to the success of our seedstock suppliers emphasis on BLUP based selection for litter size, the increase in farrowing rate is more likely due to better reproductive management by our pork producers. This would include details like more robust gilt development protocols, better semen quality, better trained farm inseminators, and, facility improvements. For the future, the increases expected in both farrowing rate and litter size will not be as strong as in the past. We have seen farrowing rate increase from 77% to 85%, and while the opportunity to increase on up to 95% exists, the difficulty in making each percent of improvement get harder as the farrowing rate gets higher. However, genetic suppliers have not been able to improve farrowing rate genetically, if this can be resolved, increasing farrowing rate above 90% becomes more likely.

Also, we can certainly increase litter size beyond 13 total born, but just how far can we do this without having large negative correlated effects. As litter size exceeds uterine capacity the number of pigs with low birth weights increases. If we focus on the number of pigs weaned that have an adequate weaning weight to be profitable (at our weaning ages), then we may in fact pursue an ‘optimal’ level of litter size rather than a ‘maximal’ level of litter size for the future.

Finally, the areas that seem to offer much opportunity for economic gain involve sow removal. If producers can lower the voluntary sow cull rate, and lower sow death rate, a significant improvement in profit would be realized. And from a social standpoint, the lowering of both sow and piglet mortality should logically be a priority for all seedstock suppliers and pork producers.

To view the complete 10 year Benchmarking summary, visit pigchamp.com/benchmarking.

DR. JOHN MABRY
Professor emeritus at Iowa State University in the Department of Animal Science, Dr. Mabry has focused his teaching and research career on the development of breeding strategies that maximize profitability of swine production systems, development and implementation of cross-herd genetic evaluation programs in swine, and usage of swine data management systems. His work in the swine industry includes the Iowa Pork Industry Center, the American Society of Animal Science and National Swine Improvement Federation. Dr. Mabry received a Bachelor of Science degree in Animal Science in 1972 from Oklahoma State University, and a Master of Science and PhD in Animal Breeding from Iowa State University in 1974 and 1977 respectively.

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Benchmarking is an inevitable part of any production process. It can be done informally, through comparisons during conversations at meetings or other get-togethers. It can be done through retrospective comparisons, by asking producers to recall prior productivity levels. Finally, it can be done by taking the records and analyzing the data in a standardized method across farms.

“To view summaries from individual countries and archived summaries from the past 10 years, visit www.pigchamp.com/benchmarking”

USING OUR DATABASE OF CLOSE TO 1,000,000 SOWS YOU CAN:

- Obtain our standard & targets to compare performance using the same software and measurements.
- Evaluate farm against industry standards and help them in setting performance goals.
- Percentile ranking for each farm value based upon comparisons to other eligible herds for continuous improvement on a quarterly basis for FREE

The first step in creating benchmarks is the establishment of a database that includes the records of the farms that share in the benchmarking project over the past 10 years. To allow comparison, only farms with stable herds that have reported production throughout the calendar year are included.

These criteria are essential to ensure the quality of benchmarking. Inclusion of farms with incomplete data may adversely affect the ability to generalize the benchmarks for one or more variables. Similarly, farms with excessively unstable female inventories may be indicative of rapid expansion or termination of operations. These variables can have extreme values that may not represent the production performance or sustainable achievement of the herd.

Of course the more data available for Benchmarking creates a higher level of qualified information for standards and targets to compare performance against other swine production entities that are using the same software and measurements. You can evaluate your farm against industry standards and set performance goals based on trends you have seen over the last decade. Be sure to check Dr. John Mabry’s article in this magazine, An Overview of the last 10 years in Benchmarking.

“Using the benchmarking data, you can evaluate your farm against industry standards and set performance goals based on trends you have seen over the last decade.”

We understand farm-level summaries using average production numbers values represent averages across all farms and do not take into account differences such as herd size, health or genetics. However, all farms should recognize their opportunities to improve within the ranges shown by this database.

For more information or to join the Benchmarking program, contact Susan Olson: benchmarking@pigchamp.com.

Susan Olson is the Knowledge Center Manager for PigCHAMP, Inc. Having worked in the swine industry for over 20 years, Susan has used and supported several of the largest record keeping software programs, and has extracted data from all to provide some of the largest producers and genetic companies vital data to help maximize profitability. As our Knowledge Center Manager for PigCHAMP, her current role is to manage the development and execution of programs, products and services that create customer and business partner value from their Benchmarking strategy.

Visit us at the new PigCHAMP.com to view a 10-year summary of Benchmarking data and past issues of Benchmark magazine.
## 2014 Year End Summary (N=429)

To view summaries of individual countries and archived summaries from the past 10 years, visit www.pigchamp.com/benchmarking

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Median</th>
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<th>Lower 10 Percentile</th>
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<tr>
<td>Total number of services</td>
<td>4974.23</td>
<td>4110.82</td>
<td>3647.00</td>
<td>10682.00</td>
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<td>Number repeat services</td>
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<td>379.89</td>
<td>217.00</td>
<td>860.00</td>
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<td>Percent repeat services</td>
<td>7.23</td>
<td>4.00</td>
<td>6.81</td>
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<td>Number of sows farrowed</td>
<td>4403.31</td>
<td>3740.84</td>
<td>3143.00</td>
<td>11025.00</td>
<td>1015.00</td>
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<td>Total pigs born</td>
<td>59808.55</td>
<td>50852.020</td>
<td>43289.00</td>
<td>144972.00</td>
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<td>Average total pigs per litter</td>
<td>13.41</td>
<td>0.92</td>
<td>13.40</td>
<td>14.60</td>
<td>12.24</td>
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<tr>
<td>Total pigs born alive</td>
<td>54499.05</td>
<td>46381.280</td>
<td>38997.00</td>
<td>131280.00</td>
<td>12029.00</td>
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<td>Average pigs born alive/litter</td>
<td>12.24</td>
<td>0.73</td>
<td>12.24</td>
<td>13.14</td>
<td>11.26</td>
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<td>Liveborn/female/yr</td>
<td>27.67</td>
<td>3.55</td>
<td>27.69</td>
<td>31.19</td>
<td>23.71</td>
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<tr>
<td>Total stillborn pigs</td>
<td>3771.89</td>
<td>3363.760</td>
<td>2845.00</td>
<td>7975.00</td>
<td>652.00</td>
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<tr>
<td>Average stillborn pigs</td>
<td>0.88</td>
<td>0.33</td>
<td>0.87</td>
<td>1.32</td>
<td>0.48</td>
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<tr>
<td>Total mummified pigs born</td>
<td>1537.61</td>
<td>2081.730</td>
<td>841.00</td>
<td>3598.00</td>
<td>66.00</td>
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<tr>
<td>Average mummies per litter</td>
<td>0.29</td>
<td>0.19</td>
<td>0.27</td>
<td>0.52</td>
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<tr>
<td>Farrowing rate</td>
<td>84.48</td>
<td>5.85</td>
<td>85.16</td>
<td>91.22</td>
<td>76.81</td>
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<tr>
<td>Pre-weaning mortality</td>
<td>15.09</td>
<td>6.44</td>
<td>13.52</td>
<td>22.84</td>
<td>8.93</td>
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<tr>
<td>Sows farrowed and weaned</td>
<td>4354.39</td>
<td>3651.180</td>
<td>3127.00</td>
<td>10465.00</td>
<td>1014.00</td>
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<tr>
<td>Average age at weaning</td>
<td>20.74</td>
<td>2.36</td>
<td>20.44</td>
<td>22.84</td>
<td>18.54</td>
</tr>
<tr>
<td>Total pigs weaned</td>
<td>45031.56</td>
<td>37482.010</td>
<td>33208.00</td>
<td>103382.00</td>
<td>10641.00</td>
</tr>
<tr>
<td>Average litter weaning weight (n=128)</td>
<td>133.80</td>
<td>40.815</td>
<td>142.26</td>
<td>170.42</td>
<td>77.90</td>
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<tr>
<td>Pigs weaned per litter weaned</td>
<td>10.82</td>
<td>0.63</td>
<td>10.87</td>
<td>11.60</td>
<td>10.04</td>
</tr>
<tr>
<td>Pigs wnd / mated female / yr</td>
<td>24.41</td>
<td>3.125</td>
<td>24.64</td>
<td>27.91</td>
<td>20.42</td>
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<tr>
<td>Pigs wnd / female / year</td>
<td>23.33</td>
<td>3.167</td>
<td>23.46</td>
<td>26.88</td>
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<tr>
<td>Females entered</td>
<td>5.06</td>
<td>48.180</td>
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<td>Sow and gilt deaths</td>
<td>169.11</td>
<td>163.624</td>
<td>106.00</td>
<td>408.00</td>
<td>32.00</td>
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<td>Death rate</td>
<td>8.54</td>
<td>3.441</td>
<td>8.06</td>
<td>12.70</td>
<td>5.26</td>
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<tr>
<td>Sows and gilts culled</td>
<td>835.72</td>
<td>774.476</td>
<td>572.00</td>
<td>1954.00</td>
<td>177.00</td>
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<td>Culling rate (n=427)</td>
<td>43.35</td>
<td>12.306</td>
<td>42.60</td>
<td>60.47</td>
<td>28.69</td>
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<tr>
<td>Total sows</td>
<td>1843.50</td>
<td>1524.110</td>
<td>1314.00</td>
<td>4170.00</td>
<td>446.00</td>
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<tr>
<td>Ending boar inventory</td>
<td>7.25</td>
<td>22.821</td>
<td>4.00</td>
<td>13.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>
With over 50% of worldwide pig production, 735 million marketed pigs in 2014, China is the powerhouse leader of the world’s swine industry. By comparison, the world’s second largest producer, the United States, is only 1/5th of China’s size. Indeed, many market opportunities exist due to China’s dominating size, but even more exist due to the significant productivity gaps across its pig production. For example, the national average weaned pigs per sow per year is about 15 and the feed conversion is 3.1:1, compared to 25 and 2.6:1 respectively in North America, Europe, or Brazil.

Realizing both the intense market size and the obvious productivity gaps, Chinese farms and entrepreneurs have been in search of solutions, making large investments to be top producers. Worldwide players in genetics, nutrition, animal health, farm equipment and facilities, design, and management consulting have participated in this trend and benefited from its growth.

“In contrast to the US, where production is primarily consolidated amongst large players, China’s market landscape is heavily fragmented.”

Unfortunately, negative price trends have put significant pressure on the industry over 15 months. From 2011 to Q3 of 2013, China’s average live pig price was primarily within the range of RMB15-19 a kilogram. However, since the last quarter of 2013, the live pig price has dropped to under RMB11 per kilo, recovering slightly to a price range of RMB13-14 in 2014, in line with the average operating cost of pig production in China. Moreover, limited access to financing, high investment cost, and frequent animal disease outbreaks further add to the challenges faced by the industry. With the majority of producers operating in the red for over a year, many have started wondering: what is going to happen in the near term for 2015, and in the long term for the entire Chinese swine industry?

CLOSED FARM FARMERS
In contrast to the US, where production is primarily consolidated amongst large players, China’s market landscape is heavily fragmented. Large, highly productive farms have only recently appeared in the Chinese market, and account for less than 15% of national output. In contrast, the majority of Chinese farms are small and medium sized, as it has been the historical norm in China. The majority of these smaller pig producers of low productivity and the heavily leveraged new farms have been hit especially hard by the consequences of China’s severe price declines.

As a result, many of these producers, unable to turn a profit for over a year, have begun to exit the market. According to the Ministry of Agriculture, the national sow herd has been dropping for 17 consecutive months—a 16% drop from 50.4M in mid-2013 to 41.9M in January 2015. On-farm pig inventory is down to 408 million in January 2015, a 3.2% drop from the prior month and 7.4% drop since January 2014. Many more such producers will follow even after the equilibrium is achieved.

PIG PRICE RECOVERY
The key reason behind China’s pig price drop is oversupply. On the demand or consumption side, with the increase of living standard and urbanization in China, meat consumption has been greatly increased, with pork at the forefront, making up about 65 percent of meat consumption. The total pork consumption in 2013 is 52.62 million metric tons, having increased over 4 times in 30 years since 1983 with compound annual growth rate (CAGR) of about 5%. This growth has slowed in recent years, growing at 1.8% CAGR from 2003 to 2013, with the China Economic Times predicting a 1.6% CAGR over the next 10 years.

By contrast, from the supply side, China’s pork production grew at 4% CAGR from 2011 to 2014 (50.6 million metric tons to 57 million). This does not include imports and exports, though this would only increase supply further as China has historically been a net importer of pork (2014: import 810,000 tons vs export 275,000 tons).

Given these supply and demand trends, oversupply is the primary reason behind the historical price drop. As the drop of sow herds and closing down of non-productive farms continues, China’s price should begin to drive upward in 2015.

LOWER COST VIA PRODUCTIVITY IMPROVEMENTS
The key opportunity ahead lies in the improvement of pig farm productivity given China’s large technological gap. Indeed, tomorrow’s market will belong to farms equipped with higher-productivity practices and to the businesses that enable these farms with the means to do so.

Look into the operating costs, the highest is the feed cost, which is 67% – 70% of total operating costs. Improvement of the feed conversion from 3.1 to 2.6 would improve 11% of the total operating costs, or RMB138 for every marketed pig. Nationally, this would conserve 30 million tons of grain enough to supply 150 million people a year. There exist several low hanging fruits that can improve feed conservation, as the primary causes of feed loss are due to physical waste, spoilage, and unnecessary over-feeding. Additional remedies exist in cultivating better swine genetics and insulating...
facilities well so the pigs would not eat to keep warm in winter.

The second highest operating cost component is the labor costs, which takes about 7.5% to 9% in most of Chinese farms. Reliable automation is not only the solution to reducing labor, it is also a means to minimize human error. Furthermore, research shows that the animals would have higher productivity in reproduction and growth if there is less human interruption. China top farms’ near-term targets are to have one labor for 300 sows and one labor for 5000 nursery pig or finishing pigs through automation.

“Our research has shown that Chinese producers have shifted their priorities to building effective farm facilities and management systems, now ranked higher than genetics, animal health, and nutrition.”

Another key indicator that China left behind is the weaned pig per sow per year as mentioned above. If reaching North America level, China would be able to eliminate 40% of the sow herd, or 40% of the operating cost and investment of the gestation and farrowing. This is achievable as Wens, the largest farm in China with 12 million marketed pigs in 2014 (1.6% share of China), claims that they have achieved 23 weaned pigs per sow per year. That is a key reason, in addition to feed savings, that Wens ad good profit margin of its pig production in 2014.

BRINGING INNOVATION TO ADDRESS KEY CHALLENGES

In order to address the key challenges of high productivity faced by the Chinese farms, Comax and Osborne Asia have been working together to provide the best equipment solutions and management services to pig farms. With Comax as a manufacturer of proven worldwide quality equipment and products in China through partnerships with worldwide technology leaders and Osborne Asia as the chief marketing and technical service partner, we’ve developed a capable ecosystem to address critical pain points:

- To eliminate the feed waste, we provide big wheel round feeders, stainless steel feeders, and automatic genetics testing stations to select the best feed conversion genetics. Research also shows that Osborne ESF stations are not only saving feed through precise sow feeding but also increasing weaned pigs.

- For total automation, Comax and Osborne Asia provide total turnkey solutions from farm design to equipment supply. Different from other turnkey providers, we manufacture our own products, equipment, and integrated systems of worldwide leading technology including feed systems and ventilation products (Valco technology), automatic sorting equipment (Osborne technology), drinkers, penning, stalls, farrowing beds, heat pads and mats. As their systems are integrated, we are able to provide optimum solution to assist farms to best utilize resources and eliminate waste to become top producers.

- For farm management, we work together with PigCHAMP to provide management software to direct operating actions, pinpoint areas of improvement, and provide data for performance management.

Our operating beliefs of providing the most reliable equipment and never disappointing our customers’ trust have enabled us to serve all the top Chinese producers including Wens, COFCO, Shineway, Zheng Bang, TRS Group, Tiuein Group, Jiahua, Sungsing, Luguangli, and more than 200 other top Chinese farms.

CLOSING THOUGHTS

Our research has shown that Chinese producers have shifted their priorities to building effective farm facilities and management systems, now ranked higher than genetics, animal health, and nutrition. This is partially due to the wider availability of genetics, nutrition, and animal health products, whereas solutions to increasing labor costs, management challenges, and environmental restrictions are scarcer. This push towards a more modern facility with reliable equipment is amongst the top efforts in the minds of Chinese producers.

China will continue as the world’s powerhouse of pig production and pork consumption. China Economic Times predicts that the total pork consumption will eventually reach 73 million tons in 25 - 30 years, from 57 million today. Indeed, while clear market challenges still exist, key suppliers of innovation will drive the next phase of growth on a national level, ultimately changing the face of pig production in China and propelling it forward.

Gangpu Lee is the Managing Director for both Comax and Osborne Asia. Prior to his current position, Mr. Lee was a Managing Director at Crimson Investment, a PE firm with over $1 billion assets in management. Before his investment career, Mr. Lee was the Vice President and GM for Danaher Asia Pacific for 11 years, helping grow Danaher’s business from $30M to $2.5B, and a founder of Moen in China. Mr. Lee has both MBA and M.S. degrees from universities in the US and China.
More than ten years ago, Eric Spell saw that the agricultural industry needed to raise the bar on recruitment practices in order to drive the talent pipeline. In the early 2000s, Monster.com, CareerBuilder and other job boards started to pop up on the internet. “That is when the light bulb in my head started flashing and I went to work designing a website for online recruitment in agriculture,” shared Spell, President of AgCareers.com.

THE BEGINNING

Spell grew up on a farm in North Carolina and received a degree in business management from North Carolina State University with a concentration in labor/personnel. In college he became fascinated with campus recruiters and thought, “What a cool job!” After going through many interviews, he had narrowed his options down to a large commodity company and a pork production company. In the late 80s, there was a lot beginning to happen in the swine industry. Spell didn’t have a good handle on pig production, but several of his mentors coached him to consider it.

Spell started with Murphy Farms (now Murphy-Brown, LLC) in their management trainee program. At that time companies were realizing they had to go where pig production was established to recruit students. Spell was in a recruitment class with new grads from all over the Midwest. The Southeast understood large-scale poultry production, but contract pig production was in its infancy there. Spell worked in sow production for a year, then a multiplication role working with contract growers. “Things were happening so fast, I was getting a lot of exposure and building excitement with the swine industry,” said Spell.

He was presented with an opportunity to help in a high school and collegiate recruitment capacity, which included traveling to 25 land-grant institutions to help support growth. That is when Spell realized that they were giving new grads the technical skills they needed, but not providing them with leadership skills. Spell was sent to England for a 60-day intensive leadership training course. When returning to the U.S. he was asked, “How do we implement this?” He suggested recruiting an experienced person from the leadership training organization to come work with Murphy Farms. After this professional was hired, Spell worked with them from the top down to identify the culture they wanted and the leadership components they needed. Then they developed a series of training programs for employees and began implementing them throughout the organization.

ENTREPRENEURIAL SPIRIT

By the end of 1996, Spell caught the entrepreneurial bug. He left Murphy Farms to start his own training and consulting business, Potential Solutions. Murphy Farms was his first client and he took on work for many other swine industry companies. At this point he mainly focused on training, but also did some recruitment consulting. This is when the boom of online job boards began and Spell developed his vision for an online recruitment tool to raise the bar in agriculture.

JobHog.net was launched in 2001. The name was developed at a time when businesses were being creative in naming internet companies, oftentimes with names that didn’t seem to fit with their business role (e.g. Amazon.com). Spell said, “The idea was that we were going to ‘hog’ all of the jobs in agriculture,” being a one-stop shop. However, some customers had the misconception that JobHog was only for swine jobs.

BECOMING AGCAREERS.COM

In 2002, Spell met the Farms.com group at the World Pork Expo. Farms.com already had a section of their site called AgCareers.com, which was more Canadian and
MIND THE GAP
DON’T LET YOUR HERD’S PRRS IMMUNITY FALL THROUGH THE CRACK.

Only FOSTERA PRRS has demonstrated 26 weeks of respiratory immunity against PRRS, so you can help protect them from day 1 and help them reach their optimal market weight.

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recruiter based, and they were working on morphing their print newsletter into more of an online presence. On the other hand, JobHog was more focused on employers in the U.S., and a collaboration seemed like a perfect fit. The companies officially merged at the end of 2003 and today’s AgCareers.com was born.

Spell’s original business plan included the online job postings, student ambassadors and a roundtable conference. He had attended a swine industry roundtable event and knew that an ag industry-wide human resources roundtable would be beneficial for the industry. The North American Roundtable has grown to become the premier education and networking event in the agricultural industry, with record-breaking attendance of more than 230 human resource professionals, university and college career services staff and industry association representatives at the last event.

The online job board aspect of AgCareers.com has experienced tremendous growth since it began, with more than 65,000 jobs posted worldwide in 2014.

Spell’s vision for student ambassadors was born when he recognized “there was a lot of variation in on-campus recruitment processes and if companies didn’t have their act together, it hurt more than helped.” The AgCareers.com Campus Ambassador program is in its 11th year and rotates across several colleges and universities which have strong ag programs. Students act as a liaison between AgCareers.com and AgCareers.com’s partnership clients and the student body at their individual institutions.

**THE FUTURE OF RECRUITMENT**

AgCareers.com and Spell continue to help educate and encourage ag employers to raise the bar in recruitment. “Today’s college students grew up with contract swine farms and are familiar with the value,” shared Spell. “We’ve done a good job of encouraging and recruiting them to production, but we now see a candidate deficit in swine nutritionists, veterinarians, researchers and meat quality specialists. We need to do more to draw young people into those fields. Retirement is a concern; how do we help this new generation of workers be part of succession planning?” added Spell.

“We now see a candidate deficit in swine nutritionists, veterinarians, researchers and meat quality specialists. We need to do more to draw young people into those fields.”

AgCareers.com’s commitment to the swine industry in particular has led to special projects such as the Employee Compensation in Pork Production study for the National Pork Board. This survey evaluated salaries and benefits within the pork industry to provide an additional tool to elevate the image of careers in the swine industry and the level of talent entering the workforce.

The Ag Warriors program was also launched to assist military men and women in the search of careers within the ag and food industries. The program opens the door for both employers and veterans to connect. Spell has seen first-hand how military veterans develop into top performers in the ag industry, especially in pork production.

Spell’s vision for AgCareers.com started from his personal experiences in the pork production industry. AgCareers.com has grown to become the leading ag-specific job board for recruitment advertising and the foremost human resources service provider for the industry. AgCareers.com launched a brand-new site design in December 2014 to continue on the forefront of online recruitment. Elevating the recruitment methods and perception of the agricultural industry overall is a continuous process. As Spell has said, “American agriculture not only feeds the world with food, we need to feed the world with talent!”

Bonnie Johnson is a Marketing Associate with AgCareers.com, the leading online career site and human resource service provider for the agricultural and food industries. In her role, she supports the AgCareers.com team and brand through marketing and communications efforts. This includes internal and external communications, email marketing, company branding and market research projects.

Bonnie was raised on a farm in Northeast Iowa. She received her undergraduate degree from the University of Northern Iowa and her Masters from Iowa State University. Bonnie has worked in marketing for 15 years and has been with AgCareers.com since 2010.
When Kelly Dodge returned to teach at her alma mater at Iowa Lakes Community College, she brought with her the skills, knowledge and tools she had gained in more than 14 years in the pork production industry. Among those tools was PigCHAMP Knowledge Software, which is now a key teaching tool in Iowa Lake's Agriculture Production Technology Program.

Iowa Lakes is a community college with campuses in several north-western Iowa communities, and offers students associate degrees and diplomas in a number of disciplines ranging from accounting to health care administration to massage therapy. Among their many varied programs are courses in agribusiness and agriculture production technology, and their campus in Emmetsburg boasts some of the best and technologically advanced facilities for students to gain hands-on experience. Students in the 2-year program split their time between classroom activities, working on the 360-acre laboratory farm, and in on-farm-job placements in the crop, beef and swine industries.

“The goal of the Swine Training Center is to replicate, on a smaller scale, what students would experience on a typical hog farm.”

The need for qualified and well-trained production workers on hog farms has been a hot-topic in the industry for many years. As the industry shifted to more specialized production, increased the use of on-farm technology and farms increased in size, production workers needed to be better equipped to meet the demands of their jobs.

Iowa Lakes has had a long history in providing agriculture production education. In 1972, the 360 acres of farmland was purchased from Dr. Howard McCutchen, a Missouri veterinarian, to create its Farm Laboratory. The Iowa Lakes Farm Foundation, a non-profit corporation, was created to govern the new farm laboratory and drew its membership from the local agriculture community. Today, students get hands-on learning opportunities in the cow/calf barn, beef feedlot, swine barns, machine shed, shop and office. Corn, soybeans and hay are the main crops grown on the farm, and students are involved in all aspects of planting, managing and harvesting the crops.

In 2013, Iowa Lakes Community College's commitment to training production workers in the swine industry was realized through the building of a brand-new, 7,500 square foot Swine Training Center, featuring a farrowing room, a nursery and three finishing spaces that connected to the existing breeding and gestation building. The unit accommodates up to 12 sows every five weeks, and the nursery and each grower space can house up to 120 pigs. Built by New Modern Concepts in Iowa Falls, the modern facility is equipped with several different styles and brands of equipment. The goal of the Swine Training Center is to replicate, on a smaller scale, what students would experience on a typical hog farm, including the most up-to-date technologies such as real-time ultrasound and artificial insemination.

Using PigCHAMP software is among the technology that students are exposed to through their learning. “It’s important for students to learn about technology that they will use in their careers,” said Dodge, who, along with several students, met with PigCHAMP staff at the 2015 Iowa Pork Congress.

The students who gathered around the

The 360-acre Iowa Lakes College Farm Lab offers students hands-on learning in swine, beef and crop production.
IOWA LAKES - CONT’D

PigCHAMP booth were enthusiastic about their education and their future job prospects. While most arrived at Iowa Lakes with some experience in the industry, either on a family farm or through part-time employment, they felt that the skills and experience that they were gaining through the program would give them an leg-up when they entered the industry full-time – propelling them into management positions faster or giving them the knowledge to make better management decisions on their family farms.

Dan Oeltjenbrus, a sophomore at Iowa Lakes, hails from rural Nebraska where he and his family have a long history of being involved in the swine industry. Working alongside his father in hog barns, and raising some pigs of his own as a high school student, Oeltjenbrus knew he wanted to work in the swine industry, but wasn’t sure exactly what he wanted to do. With a lot of choice in agriculture education, Iowa Lakes stood out to him for a number of reasons, including its reputation as a strong agriculture program, the hands-on opportunities to work on the farm and the new swine building.

“The best part of the program is how well they mix and balance class time with hands-on experience out on the farm.”

Oeltjenbrus appreciates the exposure to technology that Iowa Lakes offers its students. He and his classmates are learning how technological tools like PigCHAMP software and PigCHAMP Mobile can help make a farmer more efficient and productive. “I hope to work in hog barns and maybe even build my own,” says Oeltjenbrus. “My education will allow me to be open to more ways of doing things.”

As an agriculture instructor and manager of the hog barn, Dodge teaches varied production and agriculture business courses in swine including reproduction, animal health and grow/finish management. But it’s the time spent in working in the barn, with the students, that is the most rewarding part of her job. “The best part of what I do is teaching the students the hands-on aspects of production,” she says.

For more information about Iowa Lakes Community College and its swine education program, visit www.iowalakes.edu.

Iowa Lakes Community College built a brand-new swine facility in 2013 that gives students the opportunity to learn about the production process from breeding through to finishing. (Photo courtesy of New Modern Concepts)

The new farrowing room holds up to 12 sows and is equipped with several different styles and brands of equipment, showcasing the newest trends in swine facilities. (Photo courtesy of New Modern Concepts)

Mary Feldskov joined PigCHAMP in 2014 in the role of marketing and communications specialist. She is responsible for developing and implementing marketing and communications strategies such as the PigCHAMP website, e-newsletters, marketing materials and trade show organization. Mary is one of several team members who works remotely, and is located in Guelph, Ontario, Canada.
What's the future of swine production in Ontario? One thought is precision feeding gestating sows for increased economic efficiency and decreased environmental impact, say researchers at the University of Guelph.

A new study underway by graduate student Quincy Buis and Prof. Kees de Lange will investigate how precision feeding technology will impact group-housed sows over the course of three gestation periods at the University's Arkell Swine Research Facility.

Their vision is to integrate precision agriculture technology developed at Arkell, with the current Nutrient Requirements of Swine model from the USA's National Research Council to improve existing feeding methodologies. “By continuing to improve production efficiencies through individual sow management, we can economically benefit farmers and, at the same time, reduce the environmental emissions associated with swine production,” says Buis.

A driving force behind the project is the impending requirement for farmers to switch to group housing for mated sows and gilts, as outlined in the 2014 version of the Codes of Practice for the Care and Handling of Pigs. The regulation change, which will do away with housing gestating sows individually in gestation stalls, has been very controversial and has left many producers concerned about the costs these housing changes will incur.

Simply put, says Buis, many of today’s consumers are demanding open housing, and these demands are being formalized through regulation changes. Buis’ project seeks to cushion the economic burden on farmers, who are required to alter their infrastructure through balancing the costs of transitioning to individual sow feeding technology with producer savings as a result of increased feed efficiency.

In particular, Buis and de Lange estimate that by more closely meeting changing nutrient requirements of gestating sows, they can improve nutrient utilization efficiency, reducing feeding costs $10 per sow per gestation, while reducing nutrient losses into the environment.

Currently, a common practice for ensuring that gestation sows are getting the necessary nutrition is to simply use one common diet for all sows and feed so as to meet the highest dietary requirements of the gestation period. This overfeeds most sows for most of the gestation period, despite that it is well known that nutrient requirements increase rapidly towards the end of gestation and are higher in younger than older sows. As well, it is despite the fact that within groups of sows nutrient requirements of some sows can be double that of others.

By contrast, the computer controlled precision electronic feeding system developed for the project will adjust feeding levels and blends of diets to meet the nutrient and energy requirements of each sow individually. To recognize the sows upon entry to the feeding system, each will be provided with a unique electronic ear tag. Individual diets will then be determined based on factors such as body weight, stage of gestation, desired body condition, number of previous litters, activity level and anticipated litter size.

The precision feeding program’s success will be measured in part by comparing sow welfare and production variables - such as, sow health, litter size and quality of piglets at birth, sow lactation performance, subsequent conception rates, and sow behavior - with a control group of sows that are all fed the same standard gestation diet.

“We have a behaviorist, Dr. Stephanie Torrey, on the research team to address stereotypic sow behavior,” says Buis. “Our goal is to have very relaxed sows, as a result of having their nutritional needs met. If they are not relaxed, we expect they will return for feed more regularly.”

The SowChoice Systems Electronic Sow Feeder, used in the precision feeding study at the University of Guelph, is powered by PigCHAMP. This provides precision control of the ESF and unparalleled integration of data between the ESF and management software.
To fully assess the benefits of precision feeding gestating sows, Buis’ research will include a comparative evaluation of nutrient emissions and an economic cost-benefit analysis.

The feeding system has been developed in partnership with Canarm AgSystems. It is a research specific system, which allows for a very high level of precision when blending feed and will have a working scale within the feeder. The Canarm electronic sow feeder is powered by PigCHAMP Software.

For the Arkell Research Station, the precision feeding technology developed for Buis’ study might be the tip of the iceberg for new research projects. “The project fits well with the theme of precision agriculture, which is becoming an important theme in University of Guelph research,” says supervisor de Lange. “The innovations in software and robotics regarding precision feeding will provide a useful tool to explore other nutritional strategies for gestating sows. This includes exploring the effect of sow feeding on genetic imprinting of the fetus that can improve performance of the sows’ offspring,” he says.

For now, Buis is focused on his current project, estimating that the data collection phase will take him over the course of the next year and a half. “The sow gestation period is 114 days, and we are very interested in the carry over data from gestation to gestation period,” he says. “New questions always arise, but we hope to publish our findings within the next two years.”

Buis and de Lange ultimately view their project as an opportunity to help continue improving the competitive edge of the Ontario pork industry. “Individual animal management through integrating knowledge of swine nutrition with technology will ensure welfare and production efficiencies are optimized, while decreasing environmental impact and, hopefully, continuing to grow this sector of the agricultural economy,” says Buis.

“The innovations in software and robotics regarding precision feeding will provide a useful tool to explore other nutritional strategies for gestating sows.”

Buis has been awarded a U of G – OMAFRA Highly Qualified Personnel scholarship to pursue his research.

Other collaborators on the project include Canarm Ag Systems for the manufacture of electronic sow feeders, Ontario Pork and the Ontario Ministry of Agriculture Food and Rural Affairs (OMAFRA) for financial support, PigCHAMP for software development and the University of Guelph’s Swine Research Group and Arkell Research Station staff.

Buis and de Lange both highlight the importance of disseminating their findings to local Ontario swine farmers. Consequently, they plan to share their information at swine industry extension events and feed industry conferences with pork producers and swine nutritionists. As well, says de Lange, the software will be integrated with the electronic sow feeders that will be marketed by Canarm AgSystems.

Kyra Lightburn grew up on Vancouver Island in British Columbia. She is in her third year of pursuing a Bachelor of Science, majoring in agriculture at the University of Guelph. She is the first Ontario Agricultural College Alumni Foundation sponsored writer at the University of Guelph’s Students Promoting Awareness of Research Knowledge program. When she is not studying or writing agricultural articles, you’ll find her knee deep in the spruce swamps of northern Alberta with her trusty red husky, working hard in reforestation to fund her education.
GENETIC IMPROVEMENTS – A KEY COMPONENT TO SUCCESS ON THE FARM

Editors note: Science. Technology. Data. Genetics. They all go hand in hand in realizing the vision of a more efficient and profitable pork industry. Benchmark Magazine reached out to genetic companies to find how they utilize science, data and technology to propel the industry forward.

PROGRESS IN PIGS. EVERY DAY.

BJARNE HOLM, PHD
Chief Development Officer, Topigs Norsvin

Together we live in a dynamic and exciting business environment in which the market and technology are constantly changing. In this context Topigs Norsvin must make the right strategic choices to follow our vision “Progress in pigs. Every day.” Topigs Norsvin’s mission is to serve people, planet, and profit. We do this by striving to be the most innovative genetic company in the world.

Over the next few decades, global pork consumption is expected to increase by 1.5% per year. Pork producers are becoming bigger, more professional, and more vertically integrated. The green bar for sustainability continues to be raised for the different actors in the pork value chain. Within this context, Topigs Norsvin is passionately striving to be the world’s most innovative swine genetics company. Our breeding program is designed to cover the entire value chain. This integrated approach has two dimensions: optimizing cost throughout the chain and maximizing added value. Through optimal breeding, every trait can now be genetically improved by 2%-3% per year. Topigs Norsvin’s ambition is to double this progress by making better use of big data than anyone else, understanding the genomics of crossbreeds and heterosis, and using full-sequence information in the breeding program.

Genetic progress is powered by an intensive R&D program. Topigs Norsvin develops and implements the latest technology and knowledge to achieve genetic progress and create either added value or reduced costs in pork production. In 2015 our R&D budget is $20 million, proving that we put our money where our mouth is and contribute to a better pork production.

We invest in R&D, human resources and joint venture projects with universities, research institutes, and customers worldwide to meet our vision. Topigs Norsvin reinvests more than 15% of its revenue into new R&D for future success. Our R&D platform is built on five pillars: Reproduction, Health and Environment, Total Feed Efficiency, Meat Quality and Processing, and Genetic Technology.

Reproduction
Topigs Norsvin is one of the leading companies in AI stations all over the world with close to 9 million doses of semen sold annually. Our research focuses on high precision technology to assess quality of individual semen cells, to maximize semen dose shelf life, and maximize the number of inseminations per AI boar per year. This increases the genetic contribution of superior AI boars, giving more progress to more people faster. When it comes to the sows our goal is that every pig born is weaned. Quality and uniformity of piglets are vital for a later successful finishing performance.

Our scientists work on themes such as disease resistance and tolerance, coping with climate challenges, social interactions, structural soundness, piglet survival, and general robustness. On all of these themes, novel technology and protocols are being developed and used. Animals should perform even under the challenging conditions related to climate, disease, feed or labor. Quality of feed as well as water can strongly limit technical results in the production chain. Furthermore, labor is growing more

Realized and projected rate of improved Total Feed Efficiency

Total Feed Efficiency calculated in a real-life model including finishing and piglet production as well as sows and replacement gilts. Factors as litter size, mortality and birth weight, body weight and back fat at start and end lactation, yield, carcass composition, replacement rate etc. etc. are included. 2005 and 2015 figured based on actual Dutch production data. 2025 figure based on current genetic progress and 2035 figure based on predicted future genetic progress. Current annual rate of improvement is 180% higher than actual annual progress from 2005 to 2015. Future predicted progress is double.
limited in terms of both quality and cost. Animals need to be self-sufficient and easy to manage. Resilience and disease resistance are traits that will become more selectable through the introduction of newly developed genomic tools. Customers will experience an easier and more constant production flow with less input of resources.

Almost 70% of the production cost is feed. That is why Total Feed Efficiency is the number one trait in our breeding program. For us, Total Feed Efficiency is not only feed conversion, but also the avoidance of leakages such as death loss or inefficient sows. There are no short cuts in improving Total Feed Efficiency. Individual feed intake stations were first implemented in 1992 on both maternal and terminal lines; sow stayability and piglet mortality were implemented in operational breeding in the last decade. Finisher mortality is now being worked on directly in our research through a combined purebred and crossbred selection program. This brings efficiency directly to our customers and partners.

“Topigs Norsvin is passionately striving to be the world’s most innovative swine genetics company.”

The last step in the chain of meat production is bringing the meat to the consumer. Topigs Norsvin delivers specialized terminal lines to meet differentiated market demands. Meat quality traits such as drip loss, intramuscular fat, and color are monitored and improved using high-speed, accurate protocols that we have developed ourselves. We can already deliver products specialized for branded quality pork, reducing boar taint in intact males, reducing skin and tail damage, and carcass defects, etc. So far, we have CT scanned more than 22,000 genotyped purebred boars, generating more than 500 GB of data per boar. Together with ultrasound measurements of back fat and loin depth, as well as feed efficiency of all off-tested animals in our nucleus populations, this fuels our selection differential with high accuracy, as phenotype is king in the era of genomics. Huge investments are being made in the development and implementation of genomics technology in our breeding program. By implementing genetic markers and the genomic relation matrix, the reliability of breeding values increases. Topigs Norsvin invented the system of using crossbred, customer data in genetic improvement and we are now continuing to develop this system with genomic selection on the crossbred level. Our scientists are moving towards understanding the genomics of crossbreeds and heterosis and using full-sequence information in the breeding program. Our next step will be to use DNA patterns for precision farming and genomic management as well as new technology to increase and disseminate the frequency of desired functional genes within our populations more quickly.

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Almost 70% of the production cost is feed. That is why Total Feed Efficiency is the number one trait in our breeding program. For us, Total Feed Efficiency is not only feed conversion, but also the avoidance of leakages such as death loss or inefficient sows. There are no short cuts in improving Total Feed Efficiency. Individual feed intake stations were first implemented in 1992 on both maternal and terminal lines; sow stayability and piglet mortality were implemented in operational breeding in the last decade. Finisher mortality is now being worked on directly in our research through a combined purebred and crossbred selection program. This brings efficiency directly to our customers and partners.

“Topigs Norsvin is passionately striving to be the world’s most innovative swine genetics company.”

The last step in the chain of meat production is bringing the meat to the consumer. Topigs Norsvin delivers specialized terminal lines to meet differentiated market demands. Meat quality traits such as drip loss, intramuscular fat, and color are monitored and improved using high-speed, accurate protocols that we have developed ourselves. We can already deliver products specialized for branded quality pork, reducing boar taint in intact males, reducing skin and tail damage, and carcass defects, etc. So far, we have CT scanned more than 22,000 genotyped purebred boars, generating more than 500 GB of data per boar. Together with ultrasound measurements of back fat and loin depth, as well as feed efficiency of all off-tested animals in our nucleus populations, this fuels our selection differential with high accuracy, as phenotype is king in the era of genomics. Huge investments are being made in the development and implementation of genomics technology in our breeding program. By implementing genetic markers and the genomic relation matrix, the reliability of breeding values increases. Topigs Norsvin invented the system of using crossbred, customer data in genetic improvement and we are now continuing to develop this system with genomic selection on the crossbred level. Our scientists are moving towards understanding the genomics of crossbreeds and heterosis and using full-sequence information in the breeding program. Our next step will be to use DNA patterns for precision farming and genomic management as well as new technology to increase and disseminate the frequency of desired functional genes within our populations more quickly.
and methodology of selection. We employ the best possible tools available to measure our phenotypes including: computed tomography and immune response to pathogens. It has been shown that selecting for number born alive is effective at increasing the number; however as can been seen in certain genetic lines throughout the industry this causes more variation in piglet size complicating the producer’s ability to grow quality pigs when used alone. Our vision is to improve number of quality pigs per female and not focus on a single trait that does not add more margin to the producers P&L. Just because a sow produces more pigs does not mean she is more profitable nor does just surviving to weaning. Many runts can survive to weaning and potentially through finishing, however they are poor in feed conversion and bring little value when sent for processing. One of our methods for selection for more quality pigs is by measuring number born alive above a threshold birth weight. It has been demonstrated (Fix et al., 2010) that birth weight has a significant impact on pre-wean mortality, growth rate, and feed efficiency. We have found similar results to this and that the heritability and genetic correlations are more favorable with other production traits than number born alive alone and number weaned.

“Choice Genetics partner with producers to deliver more value/ margin to them through innovative technology and methodology of selection.”

Many genetic companies talk about robustness yet have no real measurement for response for pathogens or challenges. How can you talk about a trait like robustness but not measure it? How much value can you add in your program when you don’t measure it? Several genetic lines in the industry have excessive death loss when it faces challenges so you can see what the impact is if you don’t measure it. At Choice Genetics we have demonstrated that disease tolerance (DT) can be effective at improving the innate immune response. Previous work (Petry et al., 2005) demonstrated that genetic variation exists for the pigs’ ability to fight off infection. One misleading idea is that you can select for disease resistance for viruses like PRRS or PCV2. However, why would you be simple-minded to focus on one particular pathogen when there are a whole host of potential sources of infection. Our focus is on the innate immune response as we don’t care what the pig is challenged with, we want it to fight off the infection without ever showing signs or symptoms from being sick. It does us no good if the pig gets sick and does not continue to grow at its proper rate or even worse dies from the challenge.

When considering a genetics company to partner with remember to ask why they do what they do versus just how they do it. We believe in challenging the status quo and in thinking differently than the rest of the industry. Our product is exceptional because it is simple to maintain, producer friendly, and innovatively designed. The people of Choice Genetics just happen to make great quality pigs too.

Petry, named CEO in 2014, has worked in the swine industry for over 10 years, and first joined Choice Genetics USA in 2012 as Vice of President of R&D. He earned a Bachelor of Science degree from Texas A&M University majoring in poultry science. At the University of Nebraska-Lincoln, he earned an MBA as well as a Master’s degree and Ph.D. in animal science focusing in quantitative and molecular genetics with a minor in statistics. Petry also holds a Master’s Degree in food science from Kansas State University.
In the mid-1990s, when cell phones were still the size of a brick and computers dominated desktops, handheld data collection was a fledgling but promising innovation for the pork industry. Pigtales, then owned by PIC, first developed a commercial handheld mobile device in 1994, but it never really took off amongst producers — the technology was still in its infancy; internet and wireless connectivity was not yet widely adopted; and the paper and pen had not yet been replaced by touchscreen and ipads. When PigCHAMP and Farms.com purchased the Pigtales program in 2001, they saw tremendous opportunity in the burgeoning handheld technology trend, and set out to create a mobile platform that would work seamlessly with their PigCHAMP Reproductive software.

In 2010, PigCHAMP Mobile was launched, and promised to save producers time and money in the barn and the office. In the four years that have followed, more than 50 PigCHAMP customers have added PigCHAMP Mobile handheld units, with reports of marked improvement in data accuracy, reduced staff time spent collecting and inputting data, and access to real-time data. It would take two weeks for information to come back to us, and then we’d have to find and fix errors,” says Brienne Heinrichs, controller of Cargill Pork. “The process just took too long and there were too many errors.”

“By using PigCHAMP Mobile, we could catch any errors up front, and not have to deal with them after the fact.”

In 2012, Cargill implemented a trial of PigCHAMP Mobile at their Sow Innovation Center, a 2000-sow research farm in Kentucky, hoping to find solutions to these issues. They started with 3 handheld units and immediately started to see the benefits, primarily due to PigCHAMP Mobile’s built-in system of data validation. This feature eliminated human error on the farm and, as a result, in data entry at the bureau — that in the past would need to be fixed weeks or months down the road. “This had a large ripple effect throughout the organization,” says Heinrichs. “We could catch any errors up front, and not have to deal with them after the fact.” Information was available in real-time, and staff time was reduced because the information was automatically synced with the PigCHAMP database. This allows Cargill staff more time to spend on other important tasks.

After a successful trial period at their small research farm, Krueger decided to roll-out PigCHAMP Mobile to its newly acquired facility in Dalhart, Texas. There were a number of challenges that needed to be addressed — with the capacity for 50,000 sows, the farm was much larger than the research farm, and the multiple barns were spread out over 30 square miles. “Just getting information to and

Cargill Pork LLC, founded in 1971, is the 4th largest pork producer and processor in the United States, processing 10 million market hogs each year. As a vertically integrated company, Cargill Pork operates several company-owned farms and has contract farms throughout the Midwestern United States.

Cargill Pork expressed an interest in the mobile technology soon after its launch. The company had been a PigCHAMP customer for many years, and had established its own data-entry bureau in Arkansas. Hand-written data was collected on the geographically dispersed farms, and then would be faxed to the Arkansas location to be entered into the PigCHAMP database. The system in place presented a number of challenges for Cargill staff at multiple levels — in the barns, in the accounting system, and at the processing plants. “It would take two weeks for information to come back to us, and then we’d have to find and fix errors,” says Brienne Heinrichs, controller of Cargill Pork. “The process just took too long and there were too many errors.”
Farms.com offers a number of newsletters based on your farming interest and geography. We know that up-to-date news is vital to your success. We recap the latest information, and send it to your email inbox first thing in the morning.

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from the various barns from the office was a challenge,” says Krueger. When the Dalhart location was fully operational, it would employ more than 300 people – many of whom had no previous experience in livestock handling or production. Not only would they have to learn how to use the handhelds and enter data, but they would have to learn the life cycle of a pig and the terminology of pork production.

To roll-out 50 handheld units to staff at the Dalhart location, Cargill took a “train the trainer” approach. The key to the success, Krueger says, was the on-site support that they received from PigCHAMP staff Jayne Jackson and Teresa Naughton, who spent a week in Texas assisting with the implementation and training of staff. Staff from each of the Dalhart farm’s barns were trained how to use the handheld units, who then went back to their worksite to train their colleagues.

“The learning curve was phenomenally small – this is by far the easiest thing I’ve ever implemented.”

Krueger also credits the ease-of-use and intuitive nature of the handheld systems to the short learning curve his staff experienced. “It was very easy to teach the staff,” he says. “The units are very easy to use, the software is easy to get around. It’s easy to check for errors and validate data.” The multilingual option eliminated any language barriers that existed amongst its staff, 80% of whom were Spanish-speaking.

The ongoing support that Krueger and his staff receive from the PigCHAMP customer support team is another factor in the successful roll-out of PigCHAMP Mobile. Inevitably, with any technology, there will be issues, and with Cargill’s farms geographically dispersed across the country, Krueger is not always available to assist right away. “PigCHAMP will takes calls and emails from the farms and help them immediately.”

Overall, Krueger has been very happy with the decision to use PigCHAMP Mobile on Cargill’s research and Dalhart farms, with plans to roll-out the units to additional corporate farms over the course of 2015. Going into the project, he knew that there would be challenges and a steep learning curve – “…but it wasn’t as much as I thought it would be. The learning curve was phenomenally small – this is by far the easiest thing I’ve ever implemented.” The next step in rolling out the hand held technology is to engage Cargill’s contract farms in the process. “We immediately had two contract growers come to us, wanting to use the technology,” says Krueger, which points to the demand to simplify and automate record keeping. With multiple sites across several states, and a large variance in consistency, collection and analysis of data, Krueger is eager to implement PigCHAMP Mobile to as many of their farms as possible.

PigCHAMP MOBILE AND TRACEABILITY

With a mandatory traceability program coming into effect in July of 2014, Canadian pork producers were looking for ways to easily implement and streamline the process. PigCHAMP partnered in two Alberta Pilot Traceability Projects to help evaluate the practicability and cost-benefits of electronic data capture and transfer technologies on-farm.

Prior to the trial, Pinnacle Swine, one of the test sites, would record data manually on the farm and then fax the information to a central data-entry office – a process similar to Cargill’s. By using PigCHAMP Mobile handheld units, they found:

• 1/3 fewer hours were spent capturing and recording data, and they saw a marked improvement in data accuracy.
• When they randomly validated a subset of 180 sows, from a list of over 14,000, all were found and all data was correct.
• The value of time saved was greater than the annual operating costs of approximately $1.42/sow.

Overall, the staff involved in the trial gave positive feedback: (23) farm workers, all of whom had worked directly with the handhelds, were asked how they’d rate this new system of electronic data capture. Their ratings ranged from OK (26%), through to GOOD (52.5%) and VERY GOOD (22%).

OUTCOMES OF THE STUDY:

• Improved capability and capacity for animal identification
• Improved capability and capacity to quickly conduct age verification
• Improved ability to track livestock movements
• Improved accuracy and ease of inventory management
• Improved decision making capabilities owing to quick access to real-time data
• Compliance with Alberta livestock movement traceability outcomes

For more information about PigCHAMP Mobile, visit: www.pigchamp.com/products/mobile
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Solve problems is rarely a one-size-fits-all situation. Our solutions are field-proven and ever-evolving. Plus, we provide a variety of options to fit your specific needs.

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