



The

# DNA<sup>TM</sup> EDGE

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## DEMONSTRATING OUR COMMITMENT TO GENETIC IMPROVEMENT

DNA Genetics is dedicated to doing the right things, the right way - every day. This mindset allows us to accelerate trait performance and availability and provide swine producers with the best genetics for greater gains and improved performance.

Since our ownership is pork producer based, we look at what we need to do now, and for the long term, to achieve the best genetic progress and realize that progress at the slat level. Without the burdens of stockholder demands, we look at the business in a very different and producer-friendly way. We understand you need products to perform 24/7/365 and our genetic program provides those products.

Part of that commitment is being realized with the completion our new \$4.5 million InSight™ Performance Testing Center which is located near Columbus, Nebraska. This state-of-the-art testing facility is one of the best in the world and exemplifies our commitment to having the best people, the best pig and the best genetic option in North America.

The InSight™ Performance Testing Center also has an observatory conference room where you can observe boars going on and off test. You can also view boars utilizing FIRE™ feeders which provide data on feed efficiency for our genetic program. Our transparent approach to doing business is on display, in a bio-secure manner, with our observatory at InSight™. This viewing area is also open to groups and individuals who want to understand the swine genetics industry and

how we house and care for our animals. We believe we have a responsibility to educate the public on how we raise pork, and we feel our viewing area investment can help accomplish this in a very effective way.

InSight™ is one piece of the puzzle that needed to be assembled for profitable genetic progress to continue in the DNA nucleus herds. However, there are several other foundational investments that are required to be competitive in the long run. Genetic improvement is both complex and simple at the same time.

We use many advanced technologies every day including the FIRE™ system to record feed intake, electronic data capture that includes bar codes and automated weighing, ultrasound, DNA sampling, powerful computational computers, comprehensive databases housed in the "cloud" and cutting edge statistical techniques. While these technologies improve the accuracy and ease of collecting and analyzing data, genetic progress still gives way to the relatively simple formula of selection intensity x accuracy x genetic variation divided by the generation interval.

Fulfilling the requirements of this formula is the key to successful and measurable genetic progress. Performance data must be collected from a large number of animals in a consistent manner in order to produce an accurate ranking and achieve high selection intensity (distance of the mean of the selected animals from the average). Newly selected animals must be introduced to the nucleus herd at a rapid rate to minimize the denominator (generation interval).



— BRETT BONWELL —



— DR. TOM RATHJE —



**Demonstrating Our Commitment to Genetic Improvement**

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Everything we do impacts one or more parts of this equation. The amount of nucleus, multiplier and commercial level data affect accuracy. Genomic selection is also a simple increase in accuracy. Decisions about how many boars to test, replacement rates in the nucleus herd, and the level of performance at the nucleus all impact at least one of these elements.

Think of this in the same terms as your favorite football team. This formula represents the fundamentals that any team needs to execute to be a champion. Everyone admires a quarterback who can “thread a needle” with a perfectly placed pass, but the game is won in the trenches and depends on

best. We have retained a group of external consultants who are some of the leading minds in the industry to provide insight on the current and future direction of the program. We are committed to producing a pig that is easy to work with, performs well under field conditions, survives, thrives, grows quickly and efficiently and is produced in abundance from prolific sows producing high-quality pigs. Dr. Caitlyn Abell will provide substantial detail on our direction in a related article in this newsletter. 

*DNA Genetics is dedicated to doing the right things, the right way - every day.*

everyone being committed to execution of their assigned role. Does the O-line provide the protection and time for the play to develop? Does the receiver run the assigned route perfectly, every time? Does the defense make stops, or just like to make hits to make the highlight film? It takes a team with each member executing their job on every play. Like a football team, genetic improvement takes a team of people executing their jobs daily to produce consistent genetic gain. Execution is where DNA excels.

Our owners have made the commitment of facilities (e.g., six nucleus sites and InSight™), database development, nucleus herd size (3,600 sows in three lines), technology, great staff, the cost of testing boars, and high turnover rates in nucleus sow herds. These are the “fundamentals” and form the basis for long term success.

Finally, none of this can be successful without great coaching and decision making. Calling the right play in the world of genetic improvement means getting your selection objective right. Ensuring the selection objective produces the pig required by our customers is essential for our product to be the



*FIRE™ system*



*Observatory Conference Room*

# NEW SMS EXECUTIVE SUMMARY AND PRODUCTION INDEX

By Ron Ketchum and Mark Rix – owners, Swine Management Services, LLC

Swine Management Services, LLC (SMS) is now in its 12th year in business, working with pork producers in the United States and Canada. We work with farms by doing regular analysis of their data and sending reports back to them that point out production areas that are good and those that need improvement. We have seen which production numbers are the most important for improving pigs weaned/mated female/year by looking at large amounts of data from individual farms and over several years. We have put an increased emphasis on total born/mated female/year with our new SMS Benchmarking Program. The review of data shows that you can't wean a pig that isn't born. We don't want to see total born being a limiting factor to increased production. With higher total born numbers, you have to work very hard to reduce pre-weaning mortality and stillborns which improves piglet survival and the number of quality pigs weaned. This may mean changing a farm's standard operating procedure for farrowing rooms.



— RON KETCHUM —



— MARK RIX —

farrowings are being attended. The calculation is 100% - stillborn percentage in the period - pre-weaning mortality percentage in the period.

- Litters/Mated Female/Year are females farrowed in the period/ the days in the period X 365 days/ average mated female inventory in the period.

In the new Farm Benchmarking report we now list 30 production numbers on farm benchmarking and 18 production numbers on parity benchmarking that compare a farm against similar farms and the entire SMS database. We've selected 11 of these 48 production numbers as being key areas to improve top level production. Table 1 lists these 11 numbers:

- Pigs Weaned/Mated Female/Year are pigs weaned in the period/days in the period X 365 days/average mated female inventory in the period.
- Total Born/Mated Female/Year are pigs born in the period/days in the period X 365 days/average mated female inventory in the period.
- Piglet Survival is a term we created several years ago to compensate for the different ways farms define stillborns and pre-weaning mortality regardless of how piglet losses are recorded. It's our opinion that most stillborn pigs are potential live born pigs if

- Wean to 1st Service Interval is the average of days for weaning to the first mating for all females weaned and served in the period.
- Farrowing Rate % is a calculation that is not 100 percent accurate because it uses a standard gestation length to calculate the number of females served to farrow in a period (usually 114-115 days). Gestation length actually has a range of 110-122 days with an average close to 116+ days. The longer the time period - the more accurate the calculation.
- Female Death Loss is the number of females that died in a period/days in the period X 356 days/average female inventory. The problem with this calculation is how gilts are entered into the record program. Some farms enter gilts 120+ days before their first breeding and other enter gilts at their first breeding.

Table 1

SWINE MANAGEMENT SERVICES											
SMS Executive Summary											
52 Week Performance											
Example Farm 6											
Week Ending - Dec 27, 2013											
SMS Production Index											
"information solutions" for the Swine Industry											
Potential for Improvement = 6.6 pw/mf/yr											
100 = 36 Pigs Weaned / Mated Female / Year											
Farm is the Black Pointer & SMS Production Index is Red Number (italic)											
Percentile	Pigs Weaned / Mated Female / Year	Total Born / Mated Female / Year	Piglet Survival (100% - Stillborns% - Pre-weaning Mortality%)	Litters / Mated Female / Year	Wean to 1st Service Interval Days *	Farrowing Rate %	Female Death Loss % *	Gilt Farrowing Rate %	Total Born / Female Farrowed (P1-P2-P3)	Total Born / Female Farrowed (P1)	Retention (100% - (P1-P2-P3 Culls & Death Loss))
90-100											
70-90	94%		91%	88%	75%	77%	60%	82%			
50-70		70%							46%	61%	
30-50											31%
0-30											
Farm	29.37	34.23	86.8%	2.49	5.60	89.7%	6.4%	90.2%	40.26	13.19	64.2%
Farms above you	46	216	68	91	179	166	293	134	393	282	501
System Top 10 %	29.37	34.23	86.8%	2.49	5.60	89.7%	6.4%	90.2%	40.26	13.19	64.2%
System All	25.79	33.51	78.0%	2.36	6.52	85.8%	8.3%	84.8%	42.12	13.42	68.5%
SMS All	25.33	32.76	78.9%	2.37	6.71	85.8%	7.6%	84.2%	40.87	13.05	66.9%

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Table 2

SWINE MANAGEMENT SERVICES		"information solutions" for the Swine Industry											
SMS Farm Benchmarking													
Total Females - 1,330,000		52 Week					13 Week	26 Week	12 Quarter				
Percentile		90-100	70-90	50-70	30-50	0-30	All	All	All	All	All	All	
Number of Farms		73	145	147	146	217	726	726	726	726	726	726	
Average Female Inventory / Farm		1,752	1,807	1,362	1,897	1,877	1,831	1,843	1,843	1,843	1,782	1,782	
SMS Production Index (52 Weeks)													
SMS Production Index		85	68	55	42	22	46						
Potential for Improvement in Pigs Weaned / Mated Female / Year		5.84	8.55	9.34	11.18	13.87	10.67	10.56	10.63	11.04			
Pigs Weaned / Mated Female / Year		30.18	27.43	26.16	24.87	22.12	25.33	25.14	25.37	24.88			
Total Born / Mated Female / Year		36.50	34.71	33.74	31.37	28.91	31.76	32.53	32.78	32.00			
Piglet Survival (100% - stillborn % - pre-weaning mortality %)		84.6%	80.5%	78.9%	77.9%	76.0%	78.9%	78.3%	78.6%	78.2%			
Litters / Mated Female / Year		2.50	2.44	2.42	2.37	2.26	2.37	2.35	2.37	2.37			
Wean to 1st Service Interval		5.36	6.03	6.77	6.66	7.69	6.71	6.76	6.82	6.76			
Farrowing Rate %		90.5%	87.6%	87.1%	85.7%	82.2%	85.9%	85.0%	85.7%	85.2%			
Female Death Loss %		3.9%	7.0%	7.3%	7.9%	8.4%	7.6%	7.7%	7.8%	7.9%			
Cull Farrowing Rate %		90.1%	86.1%	85.2%	83.3%	81.3%	84.2%						
Total Pigs Born / Female Farrowed (P1+P2+P3)		42.81	42.12	41.09	40.59	39.33	40.97	Parity Information is only done for 52 weeks.					
Total Pigs Born / Female Farrowed - P 1		13.74	13.43	13.15	12.98	12.58	13.05						
Retention % (100% - P1 - P2 - P3 cull & d)		69.3%	67.3%	70.9%	66.9%	63.4%	66.9%						

The SMS Production Index has now grown from eight to the 11 production numbers listed above. Table 1 (Farm Benchmarking page 1) lists: the farm's last 52 weeks of data, how many farms are better than the farm in the 11 areas, the System Top 10 Percent and System Average, and SMS All. As the production number improves the number moves from red, to yellow, and to green for the top farms. The Potential for Improvement is also listed which is based on Index at 100 = 36 pigs weaned/mated female/year.

Table 2 contains the 11 production numbers that make up the Percentile,

The next four numbers are new and come from the new parity benchmarking. They represent an increased emphasis on an organized gilt development program. We've written many articles over the years on the importance of gilt development and how the performance of gilts in the first parity will set up their lifetime performance. This report lists 18 production numbers that compare a farm to similar farms as well as the entire SMS database. Data is broken down by parities 0-4.

Gilt Farrowing Rate % is the key driver in how the farm will perform reproductively.

Total Pigs Born/Female Farrowed (P1 + P2 + P3) is a new calculation we've created. It adds the number of pigs born/female farrowed for parities 1, 2 and 3. We feel this is important in measuring gilt development. It looks at how well the gilts performed, plus it measures if there was a parity 2 dip.

Total Pigs Born/Female Farrowed – P1 looks at the performance of the gilt litters and is a good indicator of gilt development and the future performance of the gilt throughout its lifetime on the farm.

Retention % (100% - P1 - P2 – P3 cull and deaths) is a new calculation we've developed to look at how well a farm is developing gilts to get them to the more productive parities of 3-5. It isn't a cohort analysis calculation and shouldn't be used as a comparison between farms. The calculation is 100 percent culls and death loss for parities 1, 2 and 3. Although we would've liked to include the percentage of gilt culls and death loss, the differences in how gilts are entered into the records programs isn't a good comparison between farms.

SMS Production Index, and Potential for Improvement in Pigs Weaned/Mated Female/Year. The data is listed for the past 52 weeks and is broken out by percentiles: 90-100, 70-90, 50-70, 30-50, and 0-30; as well as all farms, the past 13 weeks, past 26 weeks, and the 12 quarter averages.

Figure 1 contains 15 more production numbers that will be broken out by categories for: 52 weeks, all farms, the past 13 weeks, the past 26 weeks, and the last 12 quarters average. With the new format, no farm is represented in more than one category.

There have been numerous books written on how to improve your business. All stress the fact you can't improve what you don't measure. DNA Genetics has contracted with SMS to provide a benchmarking service twice each year for all of their customers regardless of their production level. This service provides you with the opportunity to compare your operations to other customers of DNA Genetics and identify production areas that are good and those that need improvement. If your farm isn't in the SMS Farm Benchmarking database and you'd like to be, please contact your DNA Genetics representative.

Figure 1

Other Production Numbers	
•Repeat Services %	•Multiple Matings %
•Parity of Females Farrowed	•Gestation Length
•Farrowing to Farrow Interval	•Total Pigs Born / Female
•Pigs Born Alive / Female	•Stillborns %
•Pigs Weaned / Female	•Pre-weaning Mortality %
•Weaning Age	•Parity of Inventory
•Gilts Entered % (replacement rate)	•Female Culling %
•Mated Female Non-Productive Days	

# PRODUCING THE BEST PIG FOR YOUR MARKET

As an independent supplier of genetic improvement, DNA Genetics has developed an index to produce the best pig for the North American market. Previous ties to the industry in Denmark resulted in pigs being selected to fit the Danish market. In the last few years emerging differences between the United States and European industries have changed the relative economic values for performance and reproductive traits for North American and European producers. From a reproduction perspective, LP5™ (live pigs at day 5) will continue to be emphasized. There is no better trait for improving litter size and pig quality at the same time. However, from a terminal trait perspective, index changes must be made to ensure DNA Genetics is selecting a pig that will thrive in the North American market.

In Europe, there are extreme legislative challenges to building new facilities which hold finishing space at a constant. Assuming a constant amount of finishing space lowers the relative economic value of growth and increases the value of production efficiency. Additionally, pigs are marketed at 220 lbs. in most European countries. Due to this fixed market weight within a system where finishing space is constant, early growth is not a priority. A terminal line economic index derived for the European industry places most of the emphasis on feed efficiency. Selecting to improve the feed conversion ratio will drive backfat lower, reduce intake, and set a cap on the achievable improvement in average daily gain. Moreover, loin depth is not valued in the European market, removing any emphasis on improving that measurement.

In contrast, in the North American market, overall throughput is defined by total carcass weight produced. Finishing space is considered to be “unlimited”, and increased market weights are desirable as long as a marginal profit is attainable. Improved early growth is desirable so that the amount of time spent during the less efficient finisher phase is reduced. Increasing early growth improves throughput of the system. In the North American market, further reductions in backfat are not desirable, and loin depth is valued. Feed efficiency is important, especially with pigs being marketed at heavier weights.

To produce the best pig for the North American market, DNA Genetics will emphasize improvement in growth rate throughout the pig's life. Since the North American market is operated on an all-in, all-out basis, growth rates will be



measured to a constant age versus a constant weight. Both backfat and loin depth will be considered as lean indicators, because both traits are valued by North American packers. Feed efficiency will be improved by selecting for feed intake while growth rate is included in the index. Selecting directly for feed intake as opposed to the ratio allows control over the relationship between growth rate, backfat, and feed intake. Improving feed efficiency will result in leaner pigs, but hav-

ing this control facilitates increasing growth, maintaining intake, and slowing the reduction in backfat. The InSight™ Performance Center allows for feed intake data collection on nearly twice the number of boars as tested previously encompassing 33 percent of the Duroc and nearly 20 percent of the Landrace and Yorkshire boars produced from the nucleus system. This will provide the increased accuracy needed to make industry-leading genetic progress for feed efficiency.

When evaluating the relative economic importance of a given trait, how that trait affects all other economically relevant traits will be considered. For example, to properly determine the economic value of litter size, the impact of litter size improvement on number weaned and grow-finish performance must be understood and accounted for. Trait development will be a critical part of the genetic program in order to be prepared for traits that may become economic drivers for the North American market in the future. As the swine industry evolves and the market changes, DNA Genetics will develop the appropriate selection strategy based on a systems approach. Understanding the interactions between different stages of production is crucial when defining the economic weights for an index to produce the best pig. Producing the best pig requires a continued focus on understanding the economic model of the North American market. 

**Caitlyn** joined our team as a geneticist in August 2013 after earning her PhD from Iowa State University with two majors: animal breeding and statistics. She also earned her Master of Science degree from Iowa State in animal breeding and genetics and her Bachelor of Arts degree from Western Kentucky University with a major in mathematics. She is a native of Bowling Green, KY.



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## WANT THE BEST PIG? LOOK TOWARD THE BEST PEOPLE

**These new team members represent our investment in hiring the best people who will add value for you, our customers.**

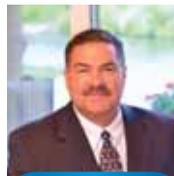
Chris Allen – Warsaw, OH

Chris joined DNA Genetics in October 2013 as a regional account manager and brings with him more than 20 years of experience in the swine industry with 12 of those in direct sales and account management.

Since joining our team, Chris has found the accessibility of our company's leadership to be an advantage and said, "Being able to talk directly to the company's leadership and get quick answers means a lot." When asked about customer relationships, Chris said, "Our industry is always facing challenges. Customers are relying on me to provide them with accurate information and to deliver value to enhance their operations." He grew up in a rural area outside of Warsaw, Ohio and from an early age Chris spent all the time he could on farms. His love for agriculture grew while showing pigs in 4-H and FFA. We are fortunate those childhood ambitions led Chris to our company.



CHRIS ALLEN



MIKE SIDWELL

Mike Sidwell-Petersburg, Illinois

Mike began in December 2013 but his career in swine genetics dates back more than a decade. As a national account leader, Mike handles direct sales and account management in the Central and Western Corn Belt. Since joining our team, he's seen the positive affect of our business principles: do what is right, do the best you can, and treat others the way you want to be treated. Mike says, "It's a big part of why I'm here and affects how we treat customers. It's so important to make them successful and help them find solutions to their needs." Mike grew up with agriculture. Mike explains, "I grew up in Petersburg, Illinois, a town that Abraham Lincoln surveyed and mapped. After catching a greased pig at Honest Abe Days, I fed it out and bought a registered Duroc bred gilt with the money." We welcome Mike to the DNA Genetics team.

