

COMPLETE
REPORT

2014 U.S. Pork Industry Productivity Analysis

National Pork Board Research Grant Report
Dr. Kenneth J. Stalder, Iowa State University



pork
checkoff[®]

pork.org | 800-456-7675

Industry Summary

The U.S. pork industry continues its goal of continuous improvement by many measures, including increased production efficiency over time. However, the effects of season/weather can negatively impact this goal, which makes getting a solid understanding of this impact of critical importance. In order to quantify the overall productivity improvements made in the industry, and to determine how seasonality impacts the industry as a whole, a national database must be analyzed for production changes between seasons, across years and among different production systems. The results from this study are based on a group of pork production companies representing approximately 35 percent of the U.S. pork industry. Specifically the study set out to quantify the annual production levels and the variation associated with several key performance indicators for the pork industry in all production phases (i.e. sow farm, nursery, wean-to-finish and conventional finisher facilities) from 2008 to 2013. Additionally, seasonal effects associated with the key performance indicators were measured

The results of this industry analysis indicate that the U.S. pork industry has been successful in improving production efficiency. However, there are some performance indicators, such as preweaning mortality, that may need additional attention to to achieve additional improvement. It was clear that steps have been taken on many farms to increase the pounds of pork produced in a given time frame while reducing finishing mortality. This, along with increased litter size, has increased the throughput of the pork industry as a whole, while other industry improvements over time can be attributed to better genetics, health and management.

The results from this analysis can be used to determine when management practices need to be improved and/or maintained to ensure the maximum performance level for each swine production stage, based on where each farm ranks for a given performance indicator. Knowing when production levels decreased allows producers and researchers to focus efforts on improving production practices during that specific time to increase production levels, improve production efficiency and ultimately improve operational profitability.

Scientific Abstract

The pork industry, like any industry, strives to continually increase production efficiency over time. Additionally, it is known that seasonal effects impacting productivity in the swine industry exist. In order to quantify the overall improvement in the industry and to determine how seasonality impacts the industry as a whole, a national database must be analyzed for production changes between seasons, across years, and among different production systems. The results presented in this study are based on a group of pork production companies representing approximately 35 percent of the U.S. pork industry. The objective of this study was to quantify the annual production levels and the variation associated with several key performance indicators for the swine industry in all swine production phases (i.e. sow farm, nursery, wean-to-finish, and conventional finisher facilities) from 2008 to 2013 as well as to quantify seasonal effects associated with the key performance indicators.

To determine the industry trends over time, raw means and standard deviations were used. To determine the seasonality effects, a linear model with fixed effects of year and company was used. Start age, start days, and days in facility were used as covariates for production information from nursery, grow-finish and wean-to-finish facilities. Weaning age was used as a covariate for the sow farm production indicators.

The results of this industry analysis indicate that the swine industry has been successful in improving production efficiency. However, there are some production indicators, such as preweaning mortality, that represent opportunities where improvement could increase production efficiency for the farm, company, and U.S. industry levels. Changes have been made to increase the pounds of pork produced in a given time frame while reducing finishing mortality. This along with increased litter size has increased the throughput of the pork industry as a whole. The industry improvements over time can be attributed to better genetics, health, management, etc. The results from this analysis can be used to determine which management practices need to be improved and/or maintained to ensure the optimum performance for each swine production stage based on where each farm ranks for a given performance indicator. Knowing when production levels decreased will allow producers and researchers to focus efforts on improving production practices during that time to increase production levels to reduce the seasonality typically observed in the pork industry.

Report

The pork industry, like any industry, strives to continually increase production efficiency over time. Additionally, it is known that seasonal effects impacting productivity in the swine industry represent substantial economic loss. In order to quantify the overall improvement in the industry and to determine how seasonality impacts the industry as a whole, a national database was evaluated for production changes between seasons. The results presented in this study are based on information submitted to a national benchmarking system that represents approximately 35 percent of the U.S. pork industry. The objective of this study was to quantify the annual production levels and the variation associated with several key performance indicators for the swine industry in all swine production phases (i.e. sow farm, nursery, wean-to-finish, and conventional finisher facilities) from 2008 to 2013 as well as to quantify seasonal effects associated with the production indicators.

One way these data may be utilized by companies and individual producers is establishing production benchmarks and targets (goals). Benchmarks are used to describe achievable performance levels for various production indicators. Benchmarks can be used to make performance comparisons between countries, companies, and farms. These comparisons can then be used to set goals for increasing herd performance. Producers can determine which production indicators need to be improved relative to the benchmark values. It is important to set attainable goals where improvements can be made incrementally. Once goals are set a plan must be defined and implemented to achieve the desired performance.

Seasonal effects can appear in all production phases. They result when production levels vary based on the time of year. For example, heat stress can have detrimental effects on production levels. Understanding seasonal effects can help producers to understand causes of lower production and levels, and then, they can make focus or improve management for specific issues during certain parts of the year. For example, monitoring when curtains are open versus closed may be more important in cooler seasons when the temperature is more variable compared to summer months when curtains should be opened constantly. Understanding and making changes to deal with seasonality can improve the production efficiency for swine operations.

To begin the large dataset evaluation, the number of companies and farms by year was tallied by year. The number of companies and the number of farms in each production stage is shown in Table 1. The farms represent the multiple sites owned by an overarching company. The dataset increased in size from year to year, especially when looking at the number of companies contributing or reporting wean-to-finish data. The number of conventional finishing companies has remained relatively constant by declining slightly at 46 in 2008 to 44 in 2013. While companies have remained constant, the number of farms recording conventional grow-finish facilities has increased from 1339 farms in 2008 to 1561 farms in 2013; however the number of reporting farms did decrease from 1744 farms in 2012. Additionally, the number of companies with wean-to-finish facilities has remained relatively constant as well increasing slightly from 2008 (23 firms) to 2013 (26 operations) companies reporting wean-to-finish production information.

However, the number of farms recording wean-to-finish production information has dramatically increased from 385 in 2008 to 886 in 2013. This increase more than doubled the number of wean-to-finish spaces in the six-year time frame. Furthermore, an additional 56 wean-to-finish farms were added to the database in the single year from 2012 to 2013. The number of companies reporting nursery data followed the trends of the number from the conventional grow-finish production information, while the number of individual farms reporting has decreased by around 100 over the same time period. The number of companies owning sows slightly increased from 2008 to 2013 increasing by six companies. From 2008 to 2013, 66 individual farms were added to the database, however only added eight farms from 2012 to 2013.

The key production indicators analyzed for conventional finishers and wean-to-finish facilities were percent mortality in finisher, finishing weight, days in finisher, and finisher feed conversion. Similar production indicators were analyzed for the nursery facilities. The sow farm measures analyzed were pigs/mated sow/year, litters/mated sow/year, total born, still born and mummies, number born alive, number weaned, percent preweaning mortality, weaning weight and weaning age.

Records were reported monthly for each production stage. For finisher and nursery data, averages within a month are based on animals exiting the facility in that month. For sow farm data, averages within a month are based on litters weaned in the month. A separate model was analyzed for each production indicator. All models contained company and month as fixed effects and year as a covariate. Additionally, effects for sow farm production indicators were adjusted for weaning age and effects for the nursery and both finisher types were adjusted for starting weight, starting age and days in the facility. Company means are not reported.

The increase in the number of companies and farms represented in the dataset indicates a tremendous improvement in the volume of information and the interpretations that can be made from the wean-to-finish production data. These data suggest that the U.S. pork industry was becoming much more data-driven during this time as indicated by the tremendous increases in the number of companies and farms reporting in the grow-finish and wean-to-finish production phases. Furthermore, data trends suggests that grow-finish and wean-to-finish producers were becoming much more like their sow-farm counterparts where decisions at the farm level needed to become much more data-driven. Also, the industry needed to move in a direction where data needed to make these decisions was collected whether the questions centered on employee, financial, health, nutritional, genetic or some combination of issues that needed to be addressed.

Tables 2-5 report the average and standard deviation for the key production indicators by year for each production stage. Tables 6-9, 10-13, and 14-17 contain the average and standard deviation for each production indicator for the top 10 percent, top 25 percent and bottom 25 percent of farms in each production stage, respectively. The farms in each percentile were determined for each production indicator meaning that the farms in each percentile were not the same for each production indicator. The top and bottom were defined as desirable and undesirable for each trait rather than numerically higher and lower.

Finishing mortality has decreased by about 1 percent for both types of finisher facilities (grow-finish and wean-to-finish) from 2008 to 2013. Finishing weights have increased over time for both conventional finisher and wean-to-finish facilities; however, days in finisher has decreased for conventional finishers and increased for wean-to-finish facilities. Wean-to-finish facilities had higher mortality compared to conventional finishers, but this would be expected as wean-to-finish producers are dealing with a newly weaned pig that is not accustomed to eating dry feed and may or may not be familiar with water access and is much lighter body weight compared to pigs in grow-finish facilities. Additionally, pigs housed in wean-to-finish facilities are housed for a longer period of time compared to the conventional finishers, which can contribute to the greater mortality when compared to conventional finishers. A 1 percent improvement in finishing mortality for a 1000-head finishing facility would be equivalent to \$1,620 each time the barn is turned assuming a 270-pound finishing weight and \$60/cwt live market price. Along with this, the average daily gain increased for conventional finishers and remained relatively unchanged for wean-to-finish facilities. Since finishing weights are similar for conventional and wean-to-finish facilities due to the amount of time pigs spend in each facility, average daily gain is greater for conventional finishers (effect of 50- to 270-pound pig in conventional finishing vs. 12- to 270-pound pig in wean-to-finish barns).

Feed conversion were slightly improved for the conventional finisher, but remained consistent in wean-to-finish facilities from 2008 through 2013. Nursery production has seen improvements over the same time period with nursery mortality dropping by 2 percent from 2008 to 2013. Exit weights were slightly higher, but were also reaching this higher exit weight in two fewer days. Average daily gain and feed conversion showed minimal change from 2008 to 2013, but continued to make improvement across time.

Pigs/mated sow/year has increased by almost 1 pig from 2008 to 2013. This can be attributed to better management and/or improved genetics. The top 10 percent of farms in pigs/mated sow/year average 29.5 pigs. While many people like to advertise how they have been able to achieve 30 pigs/mated sow/year, this data clearly points out that few producers are able to achieve this productivity level and more importantly most producers are not able to sustain that high production level for any length of time. Clearly, producers should benchmark their herd statistics where they are currently to help them identify areas where improvement could help them improve production efficiency in their operation or any phase of their operation. Litters/mated sow/year has changed little suggesting that most of the increase in pigs/mated sow/year has been a result of increasing litter size. Total born has increased by over a pig from 2008 to 2013, while the stillborn and mummies have decreased over the same time period, resulting in all of the increase in total born being realized in the number born alive. Number weaned has increased by 0.5

pigs. Unfortunately, percent preweaning mortality has increased. The increase in preweaning mortality represents lost opportunity for the pork industry, production companies and individual production farms where preweaning mortality was not maintained at previous levels (or even improved) and increased number of piglets born alive occurred over time. Weaning age has increased by 2.2 days and weaning weight has increased by one pound from 2008 to 2013. This indicates a shift from early weaning to weaning an older pig, as a heavier pig is more desirable to move into today's wean-to-finish production systems.

Porcine epidemic diarrhea virus (PEDV) was confirmed in U.S. swine herds for the first time in 2013. By the end of 2013, we were just beginning to see the ramification of this disease, particularly in the poorer performing sow herds. Where it is most obviously seen is in the total born, born alive, number weaned and preweaning mortality figures when compared to previous years. It is likely that the effects of PEDV on better performing sow herds and on downstream production will be evident in next year's report.

Figures 1-24 graphically depict the change over time for the top 25 percent, overall, and bottom 25 percent average for each production indicator in each production stage in the red, black, and blue lines, respectively. This visual clearly depicts traits that are changing in the same direction for all three groups, but each group may have different slopes (rate of change) depending on the trait being evaluated. For example, litter size averages have increased at almost the same rates for top 25 percent, overall, and bottom 25 percent groups. This suggests that a litter size limit has yet to be reached. On the other hand, the variation between the three groups in percent finisher mortality has substantially decreased over time. This could be the result of increased importance or focus placed on reducing mortality by owners, barn managers and barn workers as well as new vaccination developments.

The top 10 percent tables can be used to understand performance levels of the very best swine farms for each production indicator. These levels show what production level is possible to achieve. The top 25 percent tables show the production values for farms performing above average. These levels can be used to set attainable goals for operations performing at an average level for most production indicators. Producers ranking in the bottom 25 percent for one or more key performance indicators can focus on those measurements where performance is not acceptable and set goals based on the average production level for the given measurement.

Tables 18-21 depict the yearly change in each key performance indicator as well as the monthly effects relative to January production levels. Based on the results shown in Table 18, it is clear that litter size has increased by approximately one pig from 2008 to 2013; however, preweaning mortality has increased. Preweaning mortality was greatest among litters weaned in August and lowest in litters weaned in May. Additionally, weaning weight was greatest among litters weaned in May and lowest in litters weaned in August. Number born alive was greatest among litters weaned in August and September and lowest among litters weaned in December. Producers can use this information to determine if factors that occur from when the time sows are mated all the way through farrowing contribute to the seasonality experienced on each farm to better understand how and when seasonality will impact litter size, and thus, production flow in later production phases.

Nursery mortality has decreased and nursery exit weight has increased from 2008 to 2013 as shown in Table 19. Nursery mortality was best for pigs exiting the facility in September and poorest for pigs exiting in March. Exit weight was greatest in December and lowest in June. Feed conversion was poorest for pigs exiting in February and best for pigs exiting in June and July. Producers can use this type of nursery mortality and feed efficiency information to develop management plans to address time periods when mortality is the greatest or when feed efficiency is the poorest. At times, a simple reminder to barn workers is sufficient to bring focus on certain traits in order to bring about improvement.

The results in tables 20 and 21 show that market weight has increased from 2008 to 2013 in both finishing facility types, conventional grow-finish and wean-to-finish facilities. Finisher mortality has decreased from 2008 to 2013 in only the conventional grow finish facility, but showed not statistical significance across the same time period in the wean-to-finish facility. Market weight was lowest in August for both finisher types and highest in December for conventional and wean-to-finish facilities. Mortality in conventional finishers was best for pigs marketed in August and poorest for pigs marketed in February. Mortality in wean-to-finish facilities was highest in for pigs marketed in July. There was less variation between months for conventional finishers compared to the variation between months for wean-to-finish facilities, a reversal from previous years. This may be a result of fewer conventional

finishers in operation, and thus the variability around those is less. But more likely, the wean-to-finish growers are gaining experience with this newer type of facility and are getting more consistent performance results from them. Since producers are moving towards more wean-to-finish barn use, it's better to focus on many of the same things that improve nursery mortality and performance.

Bar graphs of the 2013 least-square means for the monthly average production level for each of the performance indicators are shown in Figures 25-43. The least square means were estimated using the model described previously. The graphs plainly show the decreased production seen during certain times of the year; an effect commonly known in the industry as seasonality. Decreased performance resulting from seasonality represents substantial productivity and economic losses for swine operations and the U.S. pork industry. Developing methods to alleviate the effects of seasonality would have a large financial impact on the entire pork industry. For example, lower finishing weights directly impact a farm's revenue. The black horizontal line in Figure 37 represents the average finishing weight for conventional finishers. Clearly, finishing weights were below average July through September with almost a 6-pound lower finishing weight in August. If the finishing weight could be increased by one pound during those months, a producer could have \$600 in increased revenue for every 1,000 pigs marketed assuming a live market hog price of \$60/cwt. In general, lowest production levels at the finishers were seen during summer months. Sow farms had lowest production for litters weaned during winter months (sows experience hot weather and then express the effects during the winter months). Except for nursery mortality, seasonality had less impact on nursery performance relative to the other production stages.

The results of this industry productivity analysis indicate that the pork industry has been successful in improving production efficiency across all farm-level production phases; however there are some production indicators, such as preweaning mortality, that may require additional focus in the upcoming years. Changes have been made to increase the pounds of pork produced in a given time frame while reducing finishing mortality. This along with increased litter size has increased the throughput of the swine industry as a whole. The industry improvements over time can be attributed to better genetics, health, management, etc.

The results from this analysis can be used to determine when management practices need to be improved and/or maintained to ensure the optimal level of performance for each swine production stage. Knowing when production levels decreased will allow producers and researchers to focus efforts on improving production practices during that time to maintain production levels and improve overall operation production and financial efficiency.

Table 1. Number of companies and farms used in analysis for each facility type by year.^a

Year		Conventional Finisher	Wean-to-Finish	Nursery	Sow
2008	Companies	46	23	41	39
	Farms	1339	385	719	708
2009	Companies	49	20	41	40
	Farms	1376	334	679	683
2010	Companies	43	19	36	33
	Farms	1350	527	571	526
2011	Companies	44	21	35	33
	Farms	1382	775	594	564
2012	Companies	50	28	45	40
	Farms	1744	830	796	766
2013	Companies	44	26	41	45
	Farms	1561	886	616	774

^aMore than one farm can be managed by the same company. A farm represents a single production site.

Table 2. Conventional finisher average (±standard deviation) productivity from 2008 to 2013^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	6.29 (±4.60)	5.12 (±3.44)	4.70 (±3.05)	4.48 (±2.49)	5.03 (±3.30)	5.04 (±3.07)
Finishing Weight (lbs)	261.2 (±16.1)	265.0 (±14.9)	268.7 (±13.4)	271.5 (±12.8)	269.2 (±14.1)	272.1 (±17.2)
Days in Finisher	125.7 (±11.0)	124.3 (±11.4)	124.6 (±10.3)	122.7 (±9.7)	121.5 (±10.8)	122.8 (±13.0)
Avg. Daily Gain (lbs)	1.69 (±0.16)	1.75 (±0.15)	1.76 (±0.14)	1.81 (±0.14)	1.81 (±0.15)	1.81 (±0.16)
Feed Conversion ^b	2.82 (0.32)	2.76 (±0.27)	2.77 (±0.25)	2.71 (±0.24)	2.68 (±0.23)	2.66 (±0.23)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 3. Wean-to-finish average (\pm standard deviation) productivity from 2008 to 2013^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	7.92 (\pm 4.91)	7.61 (\pm 4.79)	6.30 (\pm 3.55)	6.33 (\pm 3.96)	6.39 (\pm 4.79)	6.88 (\pm 4.66)
Finishing Weight (lbs)	261.7 (\pm 12.5)	264.2 (\pm 11.0)	270.5 (\pm 13.5)	273.6 (\pm 12.8)	270.1 (\pm 12.9)	274.0 (\pm 14.5)
Days in Finisher	162.5 (\pm 11.4)	164.2 (\pm 10.7)	167.9 (\pm 10.3)	166.4 (\pm 9.0)	164.3 (\pm 9.9)	165.3 (\pm 10.4)
Avg. Daily Gain (lbs)	1.54 (\pm 0.13)	1.54 (\pm 0.11)	1.54 (\pm 0.11)	1.57 (\pm 0.10)	1.57 (\pm 0.11)	1.58 (\pm 0.11)
Feed Conversion ^b	2.51 (\pm 0.17)	2.54 (\pm 0.18)	2.52 (\pm 0.20)	2.50 (\pm 0.20)	2.50 (\pm 0.18)	2.50 (\pm 0.18)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 4. Nursery average (\pm standard deviation) productivity from 2008 to 2013^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	5.82 (\pm 5.71)	4.68 (\pm 4.41)	4.12 (\pm 3.62)	4.32 (\pm 4.32)	3.80 (\pm 3.01)	3.87 (\pm 3.38)
Exit Weight	49.0 (\pm 9.2)	49.4 (\pm 8.4)	50.7 (\pm 9.1)	50.3 (\pm 9.3)	50.7 (\pm 8.4)	50.9 (\pm 8.7)
Days in Nursery	47.4 (\pm 6.8)	46.2 (\pm 5.4)	46.2 (\pm 5.5)	46.0 (\pm 6.1)	46.0 (\pm 5.1)	45.4 (\pm 5.7)
Avg. Daily Gain (lbs)	0.78 (\pm 0.14)	0.80 (\pm 0.13)	0.82 (\pm 0.14)	0.81 (\pm 0.14)	0.82 (\pm 0.13)	0.83 (\pm 0.13)
Feed Conversion ^b	1.54 (\pm 0.30)	1.53 (\pm 0.29)	1.52 (\pm 0.28)	1.53 (\pm 0.25)	1.48 (\pm 0.19)	1.48 (\pm 0.18)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 5. Sow farm average (\pm standard deviation) productivity from 2008 to 2013^a

	2008	2009	2010	2011	2012	2013
Pigs/Mated Sow/Year	22.8 (\pm 2.9)	23.2 (\pm 3.0)	23.5 (\pm 2.7)	24.1 (\pm 3.1)	23.9 (\pm 2.9)	23.7 (\pm 4.3)
Litters/Mated Sow/Year	2.35 (\pm 0.23)	2.34 (\pm 0.21)	2.33 (\pm 0.20)	2.33 (\pm 0.22)	2.31 (\pm 0.22)	2.30 (\pm 0.26)
Total Born	12.5 (\pm 0.9)	12.8 (\pm 0.9)	13.0 (\pm 1.0)	13.4 (\pm 1.1)	13.4 (\pm 1.0)	13.6 (\pm 1.1)
Stillborn and Mummies	1.23 (\pm 0.49)	1.20 (\pm 0.46)	1.22 (\pm 0.48)	1.24 (\pm 0.49)	1.17 (\pm 0.46)	1.14 (\pm 0.42)
Number Born Alive	11.3 (\pm 0.8)	11.6 (\pm 0.9)	11.8 (\pm 0.9)	12.1 (\pm 1.0)	12.3 (\pm 0.9)	12.4 (\pm 1.0)
Number Weaned	9.7 (\pm 0.7)	9.9 (\pm 0.8)	10.0 (\pm 0.7)	10.2 (\pm 0.7)	10.3 (\pm 0.7)	10.2 (\pm 1.3)
Pre-weaning Mortality %	14.2 (\pm 5.5)	14.5 (\pm 5.6)	14.6 (\pm 5.8)	15.5 (\pm 5.9)	15.5 (\pm 5.7)	17.3 (\pm 10.9)
Weaning Weight (lbs)	12.4 (\pm 1.3)	12.8 (\pm 1.5)	13.0 (\pm 1.4)	13.1 (\pm 1.4)	13.2 (\pm 1.6)	13.4 (\pm 1.7)
Weaning Age (d)	19.7 (\pm 1.8)	20.5 (\pm 2.0)	20.8 (\pm 2.1)	20.9 (\pm 2.5)	21.5 (\pm 2.8)	21.9 (\pm 2.9)

^aAll farms were given equal weighting.

Table 6. Conventional finisher average (\pm standard deviation) productivity from 2008 to 2013 for farms in the top 10% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	1.90 (\pm 0.56)	1.50 (\pm 0.46)	1.44 (\pm 0.42)	1.37 (\pm 0.41)	1.62 (\pm 0.44)	1.62 (\pm 0.50)
Finishing Weight (lbs)	291.3 (\pm 10.2)	292.8 (\pm 8.8)	291.3 (\pm 6.9)	293.9 (\pm 7.8)	292.7 (\pm 11.4)	300.1 (\pm 15.4)
Days in Finisher	106.0 (\pm 5.5)	105.0 (\pm 5.5)	106.8 (\pm 5.0)	105.0 (\pm 5.2)	103.5 (\pm 5.7)	103.0 (\pm 6.2)
Avg. Daily Gain (lbs)	1.95 (\pm 0.08)	2.00 (\pm 0.09)	2.00 (\pm 0.07)	2.05 (\pm 0.09)	2.05 (\pm 0.07)	2.10 (\pm 0.11)
Feed Conversion ^b	2.34 (\pm 0.14)	2.35 (\pm 0.13)	2.39 (\pm 0.10)	2.38 (\pm 0.08)	2.35 (\pm 0.08)	2.34 (\pm 0.09)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 7. Wean-to-finish average (\pm standard deviation) productivity from 2008 to 2013 for farms in the top 10% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	2.80 (\pm 0.67)	2.54 (\pm 0.65)	2.28 (\pm 0.58)	2.34 (\pm 0.44)	1.94 (\pm 0.51)	2.19 (\pm 0.61)
Finishing Weight (lbs)	282.2 (\pm 6.7)	282.2 (\pm 4.7)	294.1 (\pm 4.8)	295.5 (\pm 3.5)	293.3 (\pm 4.5)	297.2 (\pm 5.5)
Days in Finisher	144.6 (\pm 6.1)	146.8 (\pm 6.6)	149.0 (\pm 5.8)	152.1 (\pm 2.9)	147.5 (\pm 5.4)	148.7 (\pm 8.1)
Avg. Daily Gain (lbs)	1.75 (\pm 0.05)	1.73 (\pm 0.08)	1.74 (\pm 0.06)	1.74 (\pm 0.04)	1.76 (\pm 0.06)	1.77 (\pm 0.07)
Feed Conversion ^b	2.23 (\pm 0.12)	2.24 (\pm 0.09)	2.23 (\pm 0.05)	2.19 (\pm 0.05)	2.21 (\pm 0.04)	2.22 (\pm 0.08)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 8. Nursery average (\pm standard deviation) productivity from 2008 to 2013 for farms in the top 10% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	1.06 (\pm 0.36)	0.93 (\pm 0.31)	0.95 (\pm 0.34)	0.91 (\pm 0.31)	0.94 (\pm 0.28)	0.84 (\pm 0.29)
Exit Weight	68.7 (\pm 8.5)	66.1 (\pm 7.4)	68.5 (\pm 9.1)	69.0 (\pm 9.4)	65.8 (\pm 4.2)	66.1 (\pm 5.9)
Days in Nursery	36.6 (\pm 3.9)	37.3 (\pm 3.4)	38.3 (\pm 3.9)	35.8 (\pm 4.2)	36.3 (\pm 3.3)	34.8 (\pm 3.9)
Avg. Daily Gain (lbs)	1.05 (\pm 0.11)	1.05 (\pm 0.08)	1.09 (\pm 0.09)	1.08 (\pm 0.11)	1.04 (\pm 0.06)	1.07 (\pm 0.09)
Feed Conversion ^b	1.07 (\pm 0.19)	1.11 (\pm 0.18)	1.08 (\pm 0.21)	1.16 (\pm 0.15)	1.16 (\pm 0.16)	1.18 (\pm 0.16)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 9. Sow farm average (\pm standard deviation) productivity from 2008 to 2013 for farms in the top 10% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Pigs/Mated Sow/Year	27.5 (\pm 1.4)	27.6 (\pm 1.2)	27.7 (\pm 1.2)	29.2 (\pm 3.1)	28.5 (\pm 2.0)	29.5 (\pm 3.9)
Litters/Sow/Year	2.71 (\pm 0.14)	2.67 (\pm 0.13)	2.64 (\pm 0.14)	2.69 (\pm 0.17)	2.65 (\pm 0.11)	2.74 (\pm 0.24)
Total Born	14.1 (\pm 0.7)	14.2 (\pm 0.4)	14.7 (\pm 0.5)	15.3 (\pm 0.6)	15.1 (\pm 0.4)	15.3 (\pm 0.9)
Stillborn and Mummies	0.59 (\pm 0.14)	0.60 (\pm 0.12)	0.62 (\pm 0.10)	0.61 (\pm 0.11)	0.55 (\pm 0.13)	0.50 (\pm 0.14)
Number Born Alive	12.6 (\pm 0.3)	12.9 (\pm 0.4)	13.3 (\pm 0.5)	13.9 (\pm 0.6)	13.8 (\pm 0.4)	14.0 (\pm 0.8)
Number Weaned	10.9 (\pm 0.3)	11.0 (\pm 0.3)	11.2 (\pm 0.4)	11.4 (\pm 0.3)	11.5 (\pm 0.3)	11.7 (\pm 0.3)
Pre-weaning Mortality %	5.2 (\pm 3.4)	5.8 (\pm 2.9)	4.6 (\pm 4.3)	5.8 (\pm 2.2)	5.6 (\pm 3.5)	5.4 (\pm 2.9)
Weaning Weight (lbs)	14.9 (\pm 1.5)	15.7 (\pm 0.9)	15.5 (\pm 1.1)	15.5 (\pm 0.7)	16.2 (\pm 0.8)	16.7 (\pm 0.9)
Weaning Age (d)	22.9 (\pm 1.3)	24.7 (\pm 1.3)	24.9 (\pm 1.1)	25.4 (\pm 1.4)	27.0 (\pm 1.6)	27.8 (\pm 1.8)

^aAll farms were given equal weighting.

Table 10. Conventional finisher average (\pm standard deviation) productivity from 2008 to 2013 for farms in the top 25% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	2.61 (\pm 0.72)	2.16 (\pm 0.65)	2.03 (\pm 0.58)	1.96 (\pm 0.58)	2.25 (\pm 0.63)	2.24 (\pm 0.62)
Finishing Weight (lbs)	281.4 (\pm 10.5)	283.8 (\pm 9.5)	284.9 (\pm 7.0)	287.2 (\pm 7.5)	285.4 (\pm 9.5)	291.1 (\pm 12.3)
Days in Finisher	111.9 (\pm 6.2)	110.5 (\pm 5.8)	111.9 (\pm 5.4)	110.3 (\pm 5.6)	108.4 (\pm 5.5)	108.3 (\pm 5.9)
Avg. Daily Gain (lbs)	1.88 (\pm 0.08)	1.93 (\pm 0.08)	1.93 (\pm 0.07)	1.98 (\pm 0.08)	1.98 (\pm 0.08)	2.01 (\pm 0.10)
Feed Conversion ^b	2.46 (\pm 0.14)	2.45 (\pm 0.12)	2.48 (\pm 0.10)	2.46 (\pm 0.09)	2.43 (\pm 0.08)	2.42 (\pm 0.09)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 11. Wean-to-finish average (\pm standard deviation) productivity from 2008 to 2013 for farms in the top 25% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	3.65 (\pm 0.85)	3.44 (\pm 0.89)	3.04 (\pm 0.76)	2.98 (\pm 0.64)	2.65 (\pm 0.70)	2.99 (\pm 0.81)
Finishing Weight (lbs)	276.39 (\pm 6.6)	277.5 (\pm 5.0)	287.5 (\pm 6.5)	290.2 (\pm 5.2)	286.7 (\pm 6.5)	290.9 (\pm 6.4)
Days in Finisher	149.6 (\pm 5.8)	152.0 (\pm 5.8)	155.1 (\pm 6.4)	155.7 (\pm 3.6)	152.1 (\pm 5.1)	153.3 (\pm 6.6)
Avg. Daily Gain (lbs)	1.69 (\pm 0.06)	1.67 (\pm 0.07)	1.67 (\pm 0.07)	1.69 (\pm 0.05)	1.70 (\pm 0.06)	1.71 (\pm 0.06)
Feed Conversion ^b	2.31 (\pm 0.11)	2.33 (\pm 0.09)	2.29 (\pm 0.64)	2.25 (\pm 0.06)	2.26 (\pm 0.06)	2.29 (\pm 0.08)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 12. Nursery average (\pm standard deviation) productivity from 2008 to 2013 for farms in the top 25% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	1.63 (\pm 0.56)	1.42 (\pm 0.48)	1.43 (\pm 0.47)	1.36 (\pm 0.45)	1.36 (\pm 0.41)	1.32 (\pm 0.46)
Exit Weight	61.4 (\pm 8.2)	60.4 (\pm 6.7)	62.4 (\pm 7.7)	62.2 (\pm 8.2)	61.4 (\pm 4.6)	61.5 (\pm 5.5)
Days in Nursery	40.1 (\pm 4.0)	39.8 (\pm 3.0)	40.0 (\pm 3.6)	39.5 (\pm 3.9)	36.5 (\pm 3.5)	38.1 (\pm 4.0)
Avg. Daily Gain (lbs)	0.96 (\pm 0.11)	0.97 (\pm 0.08)	1.00 (\pm 0.10)	0.99 (\pm 0.11)	0.98 (\pm 0.07)	0.99 (\pm 0.09)
Feed Conversion ^b	1.24 (\pm 0.18)	1.25 (\pm 0.17)	1.25 (\pm 0.20)	1.28 (\pm 0.14)	1.28 (\pm 0.13)	1.28 (\pm 0.14)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 13. Sow farm average (\pm standard deviation) productivity from 2008 to 2013 for farms in the top 25% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Pigs/Mated Sow/Year	26.2 (\pm 1.4)	26.5 (\pm 1.2)	26.6 (\pm 1.2)	27.5 (\pm 2.4)	27.2 (\pm 1.4)	27.8 (\pm 2.9)
Litters/Mated Sow/Year	2.60 (\pm 0.13)	2.56 (\pm 0.12)	2.55 (\pm 0.12)	2.58 (\pm 0.15)	2.55 (\pm 0.11)	2.59 (\pm 0.20)
Total Born	13.7 (\pm 0.6)	13.9 (\pm 0.4)	14.2 (\pm 0.5)	14.7 (\pm 0.6)	14.7 (\pm 0.5)	14.8 (\pm 0.7)
Stillborn and Mummies	0.75 (\pm 0.17)	0.74 (\pm 0.14)	0.75 (\pm 0.13)	0.76 (\pm 0.15)	0.70 (\pm 0.16)	0.68 (\pm 0.17)
Number Born Alive	12.3 (\pm 0.37)	12.6 (\pm 0.4)	12.9 (\pm 0.5)	13.4 (\pm 0.6)	13.4 (\pm 0.4)	13.6 (\pm 0.6)
Number Weaned	10.6 (\pm 0.3)	10.7 (\pm 0.3)	10.9 (\pm 0.4)	11.1 (\pm 0.4)	11.2 (\pm 0.3)	11.3 (\pm 0.4)
Pre-weaning Mortality %	7.7 (\pm 3.0)	8.2 (\pm 2.7)	7.6 (\pm 3.7)	8.4 (\pm 2.6)	8.4 (\pm 3.3)	8.3 (\pm 3.0)
Weaning Weight (lbs)	14.0 (\pm 1.2)	14.8 (\pm 0.9)	14.9 (\pm 0.9)	14.9 (\pm 0.7)	15.3 (\pm 0.9)	15.7 (\pm 1.0)
Weaning Age (d)	21.8 (\pm 1.2)	23.2 (\pm 1.5)	23.6 (\pm 1.3)	24.0 (\pm 1.6)	25.2 (\pm 1.9)	25.8 (\pm 2.1)

^aAll farms were given equal weighting.

Table 14. Conventional finisher average (\pm standard deviation) productivity from 2008 to 2013 for farms in the bottom 25% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	12.06 (\pm 5.72)	9.28 (\pm 4.32)	8.40 (\pm 3.75)	7.63 (\pm 2.53)	8.98 (\pm 4.21)	8.91 (\pm 3.50)
Finishing Weight (lbs)	241.9 (\pm 9.3)	247.1 (\pm 8.7)	251.7 (\pm 8.6)	255.9 (\pm 8.0)	252.1 (\pm 10.2)	252.9 (\pm 15.9)
Days in Finisher	139.2 (\pm 6.8)	138.5 (\pm 7.9)	137.1 (\pm 7.2)	134.3 (\pm 5.4)	135.2 (\pm 6.8)	140.3 (\pm 8.6)
Avg. Daily Gain (lbs)	1.48 (\pm 0.08)	1.57 (\pm 0.08)	1.58 (\pm 0.09)	1.64 (\pm 0.08)	1.63 (\pm 0.09)	1.62 (\pm 0.10)
Feed Conversion ^b	3.21 (0.26)	3.10 (\pm 0.20)	3.11 (\pm 0.20)	3.02 (\pm 0.22)	2.99 (\pm 0.16)	2.98 (\pm 0.16)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 15. Wean-to-finish average (\pm standard deviation) productivity from 2008 to 2013 for farms in the bottom 25% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	14.43(\pm 5.36)	13.63 (\pm 5.65)	10.87 (\pm 3.91)	11.26 (\pm 4.79)	12.21 (\pm 6.18)	12.59 (\pm 5.87)
Finishing Weight (lbs)	246.4 (\pm 10.0)	249.9 (\pm 6.2)	253.5 (\pm 7.8)	257.6 (\pm 7.4)	254.1 (\pm 7.5)	255.5 (\pm 10.9)
Days in Finisher	176.8 (\pm 9.4)	178.2 (\pm 5.8)	180.3 (\pm 6.6)	178.1 (\pm 5.6)	176.7 (\pm 5.5)	177.9 (\pm 7.0)
Avg. Daily Gain (lbs)	1.39 (\pm 0.08)	1.41 (\pm 0.05)	1.41 (\pm 0.06)	1.44 (\pm 0.06)	1.43 (\pm 0.06)	1.45 (\pm 0.07)
Feed Conversion ^b	2.73 (\pm 0.10)	2.75 (\pm 0.15)	2.78 (\pm 0.17)	2.75 (\pm 0.12)	2.73 (\pm 0.10)	2.73 (\pm 0.11)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 16. Nursery average (\pm standard deviation) productivity from 2008 to 2013 for farms in the bottom 25% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Percent Mortality	13.14 (\pm 7.15)	10.31 (\pm 5.53)	8.61 (\pm 4.72)	9.36 (\pm 6.02)	7.70 (\pm 3.56)	7.90 (\pm 4.51)
Exit Weight	39.6 (\pm 3.1)	39.8 (\pm 3.1)	40.6 (\pm 4.1)	40.2 (\pm 4.1)	40.1 (\pm 4.2)	39.9 (\pm 4.7)
Days in Nursery	55.1 (\pm 7.3)	52.1 (\pm 5.2)	52.5 (\pm 4.8)	52.7 (\pm 6.2)	51.7 (\pm 3.4)	51.7 (\pm 4.0)
Avg. Daily Gain (lbs)	0.64 (\pm 0.05)	0.65 (\pm 0.06)	0.66 (\pm 0.06)	0.66 (\pm 0.05)	0.66 (\pm 0.05)	0.67 (\pm 0.07)
Feed Conversion ^b	1.89 (\pm 0.32)	1.84 (\pm 0.33)	1.80 (\pm 0.32)	1.79 (\pm 0.29)	1.71 (\pm 0.15)	1.69 (\pm 0.13)

^aAll farms were given equal weighting. ^bFeed conversion is defined as feed to gain.

Table 17. Sow farm average (\pm standard deviation) productivity from 2008 to 2013 for farms in the bottom 25% for each production indicator^a

	2008	2009	2010	2011	2012	2013
Pigs/Mated Sow/Year	19.0 (\pm 2.0)	19.3 (\pm 2.7)	20.0 (\pm 2.1)	20.4 (\pm 2.4)	20.1 (\pm 2.4)	18.7 (\pm 4.6)
Litters/Mated Sow/Year	2.07 (\pm 0.17)	2.09 (\pm 0.20)	2.09 (\pm 0.15)	2.07 (\pm 0.15)	2.04 (\pm 0.18)	2.00 (\pm 0.21)
Total Born	11.4 (\pm 0.4)	11.7 (\pm 0.4)	11.8 (\pm 0.5)	12.1 (\pm 0.5)	12.1 (\pm 0.5)	12.1 (\pm 0.5)
Stillborn and Mummies	1.80 (\pm 0.57)	1.78 (\pm 0.48)	1.84 (\pm 0.51)	1.83 (\pm 0.54)	1.74 (\pm 0.47)	1.67 (\pm 0.38)
Number Born Alive	10.3 (\pm 0.5)	10.5 (\pm 0.6)	10.7 (\pm 0.5)	11.0 (\pm 0.6)	11.4 (\pm 0.6)	11.2 (\pm 0.5)
Number Weaned	8.7 (\pm 0.6)	8.9 (\pm 0.8)	9.1 (\pm 0.6)	9.3 (\pm 0.7)	9.4 (\pm 0.6)	8.8 (\pm 1.9)
Pre-weaning Mortality %	21.2 (\pm 3.2)	21.5 (\pm 4.4)	21.6 (\pm 3.7)	22.9 (\pm 4.1)	22.5 (\pm 3.4)	29.1 (\pm 15.1)
Weaning Weight (lbs)	11.0 (\pm 0.7)	11.2 (\pm 0.6)	11.5 (\pm 0.5)	11.5 (\pm 0.5)	11.5 (\pm 0.5)	11.5 (\pm 0.6)
Weaning Age (d)	17.6 (\pm 1.0)	18.3 (\pm 0.8)	18.5 (\pm 0.8)	18.0 (\pm 1.4)	18.3 (\pm 1.1)	18.6 (\pm 1.2)

^aAll farms were given equal weighting.

Fig. 1: Avg. Finish Weight - Conventional Finisher

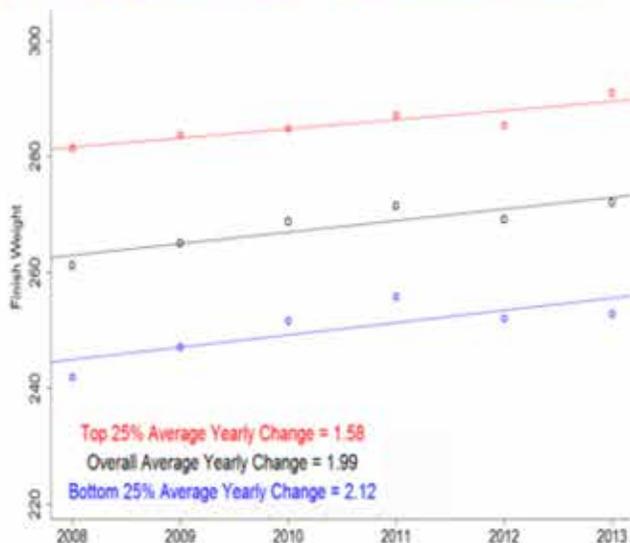


Fig. 2: Avg. Days in Finisher/Yr-Conventional Finisher

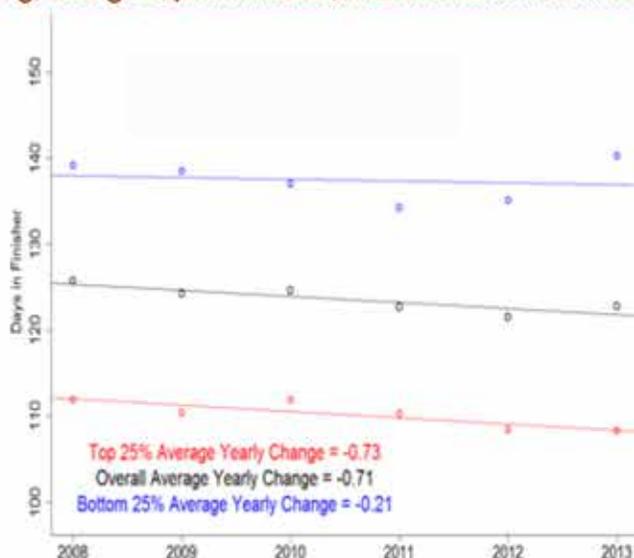


Fig. 3: Avg. Daily Gain - Conventional Finisher

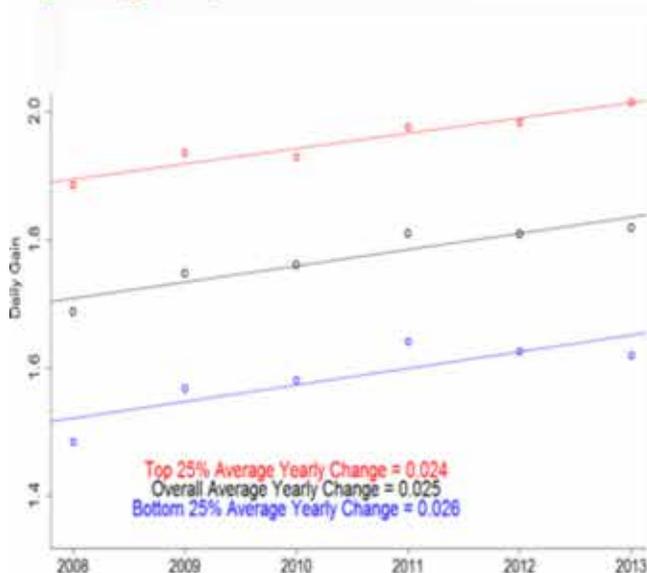


Fig. 4: Avg. Feed Efficiency - Conventional Finisher

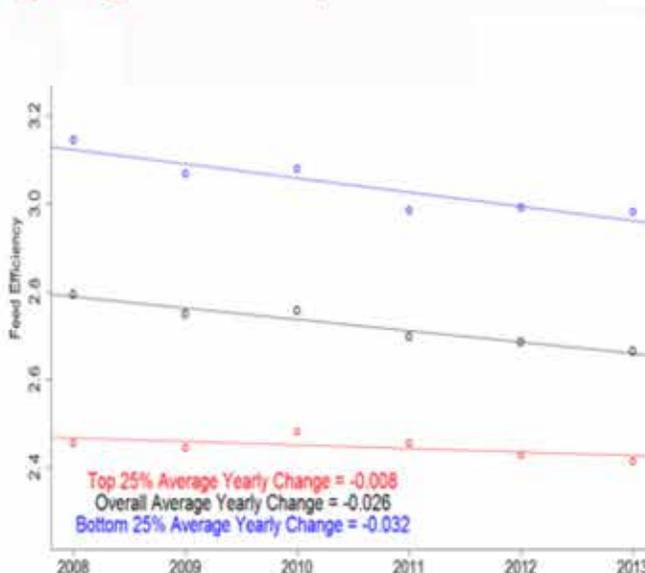


Fig. 5: Avg. % Mortality - Conventional Finisher



Fig. 6: Avg. Finish Weight - Wean to Finish

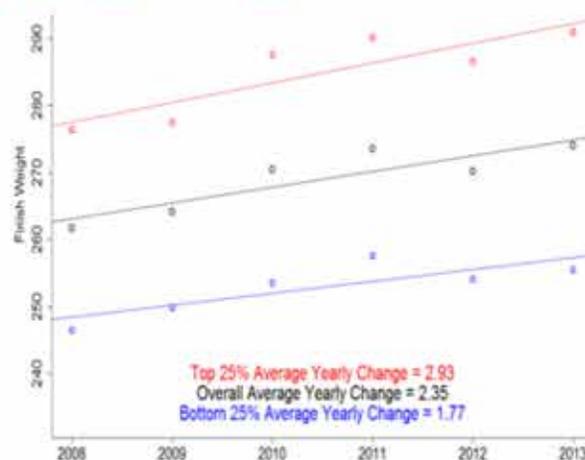


Fig. 7: Avg. Days in Finisher - Wean to Finish

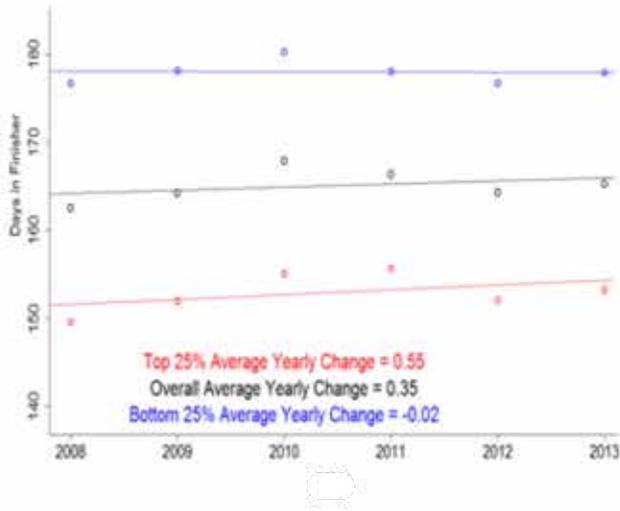


Fig. 8: Avg. Daily Gain - Wean to Finish

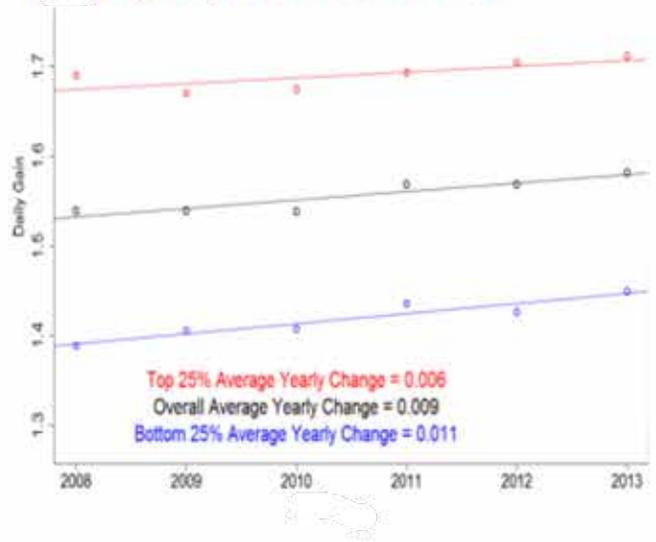


Fig. 9: Avg. Feed Efficiency - Wean to Finish

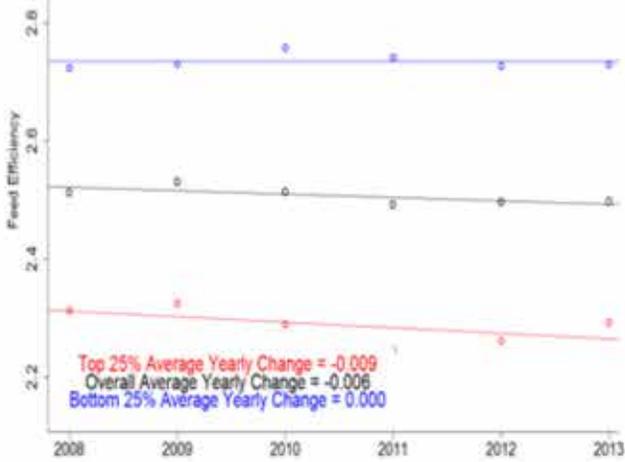


Fig. 10: Avg. % Mortality - Wean to Finish

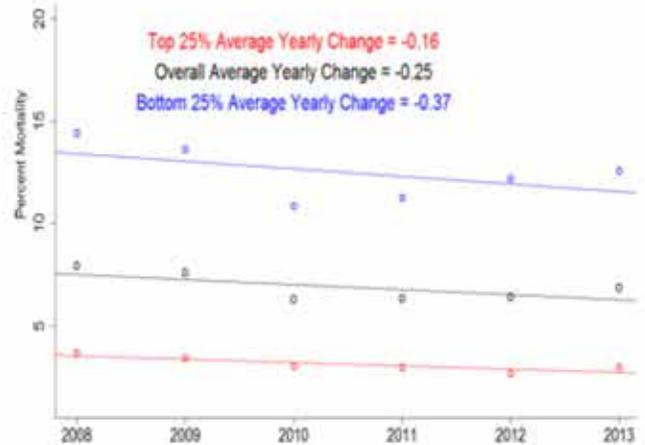


Fig. 11: Avg. Nursery Exit Weight

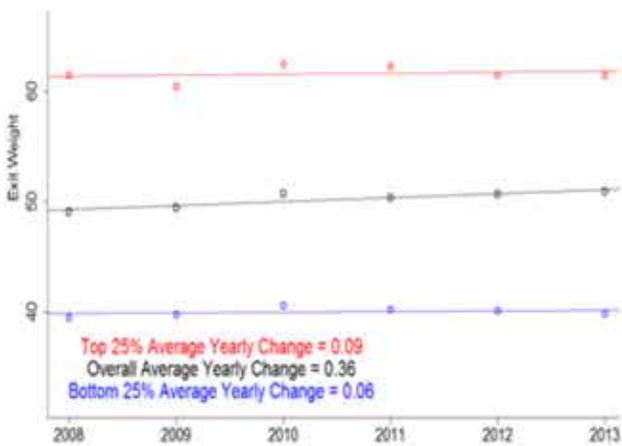


Fig. 12: Avg. Days in Nursery

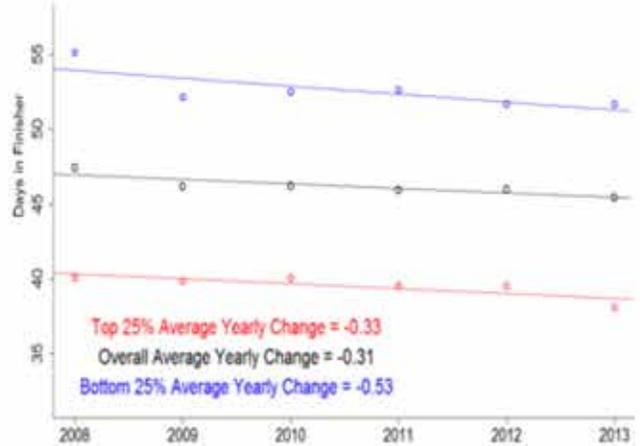


Fig. 13: Avg. Daily Gain in Nursery

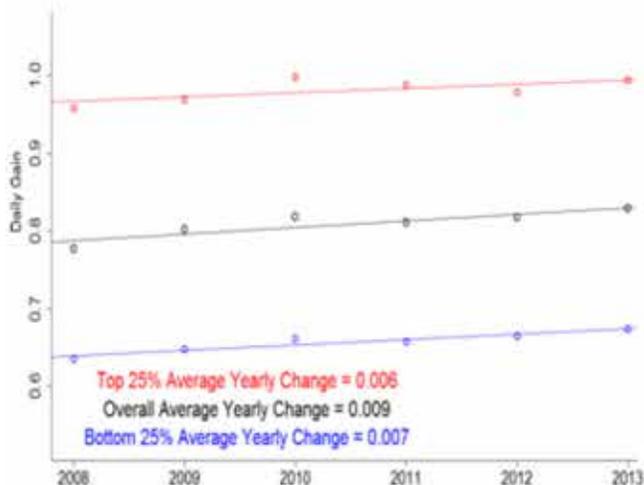


Fig. 14: Avg. Nursery Feed Efficiency

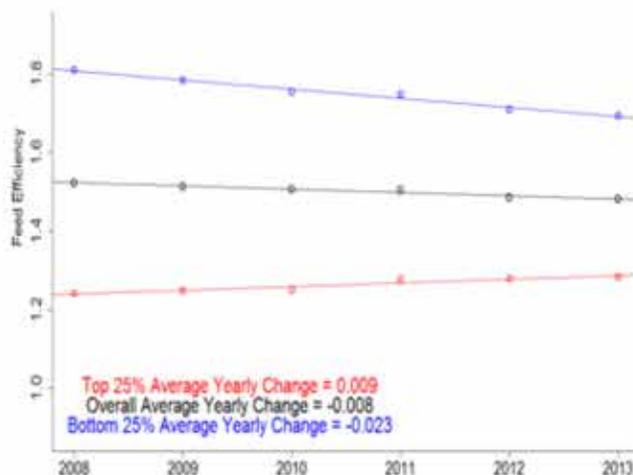


Fig. 15: Avg. % Mortality in Nursery



Fig. 16: Avg. Pigs/Mated Sow/Year by Year

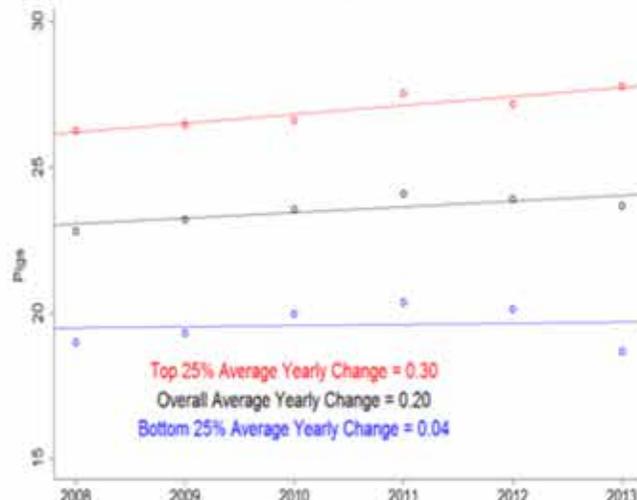


Fig. 17: Avg. Litters Mated/Sow/Year by Year



Fig. 18: Avg. Total Born per Litter

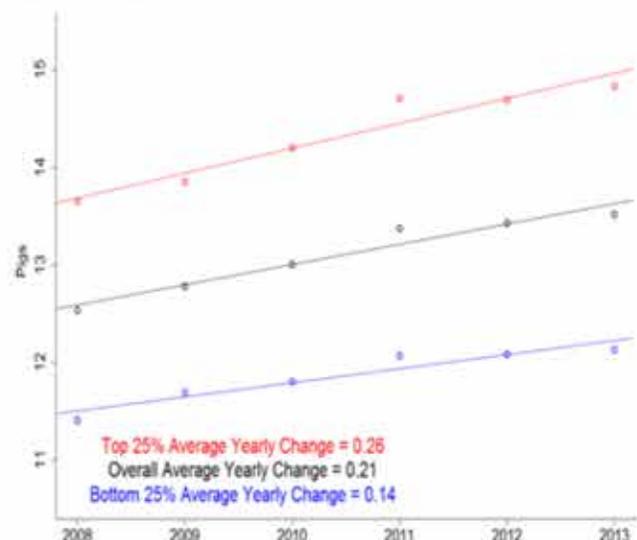


Fig. 19: Avg. Stillborn and Mummies/Litter



Fig. 20: Avg. Born Alive/Litter

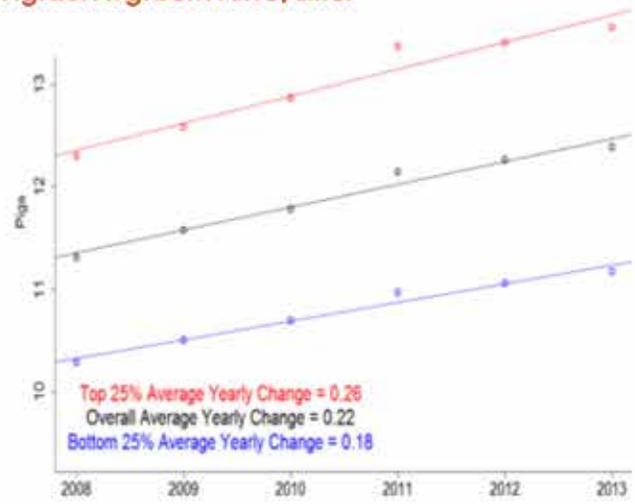


Fig. 21: Avg. Pigs Weaned/Litter

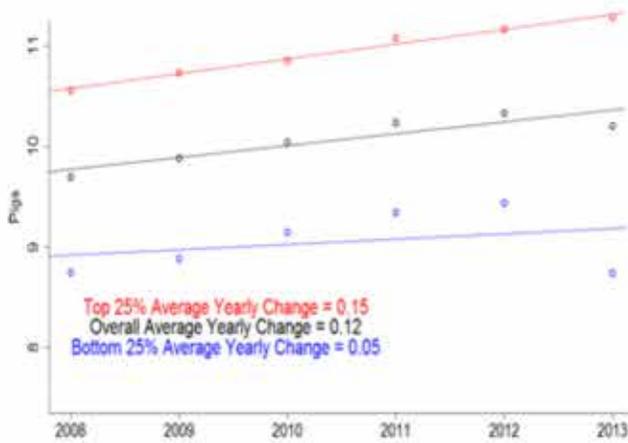


Fig. 22: Avg. Pre-Weaning Mortality

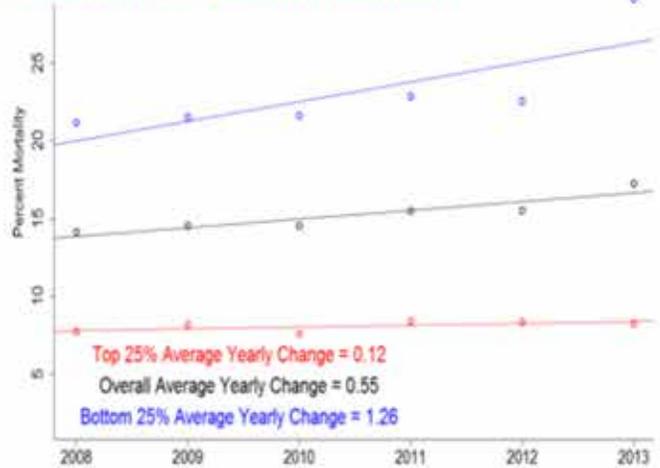


Fig. 23: Avg. Weaning Weight

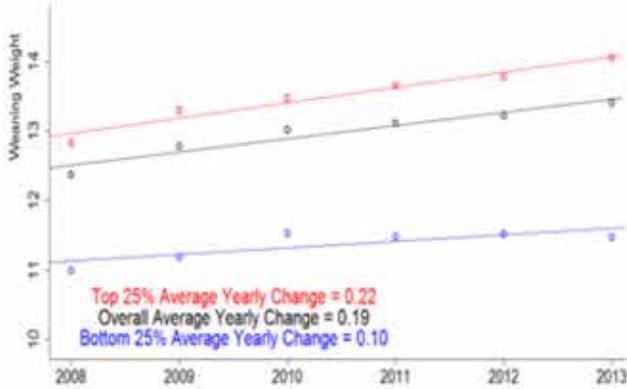


Fig. 24: Avg. Weaning Age

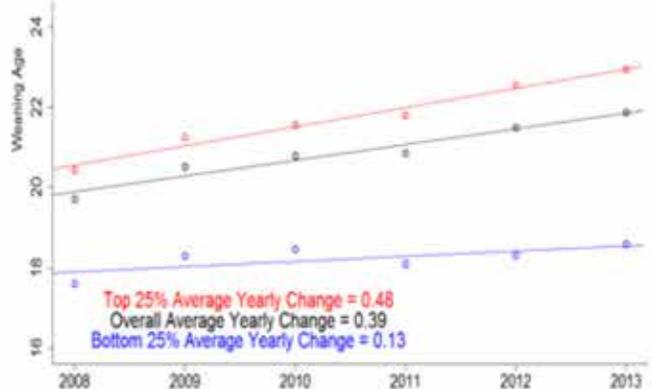


Table 22. Seasonal effect estimates for sow facilities adjusted for weaning age

	Year	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
PSY ^a	0.34*	0.82*	1.07*	0.92*	1.03*	1.40*	1.52*	1.34*	1.30*	0.87*	0.13*	-0.37*
LSY	0.00	0.06*	0.07*	0.04*	0.03*	0.07*	0.09*	0.08*	0.07*	0.04*	-0.02*	-0.05*
TB	0.23*	0.15*	0.16*	0.19*	0.19*	0.25*	0.27*	0.27*	0.25*	0.17*	0.06*	0.04*
SBM	0.004*	0.034*	0.012	-0.008	-0.017	-0.005	-0.001	-0.007	-0.025*	-0.034*	-0.049*	-0.020*
NBA	0.22*	0.11*	0.15*	0.20*	0.21*	0.25*	0.27*	0.28*	0.28*	0.20*	0.11*	0.06*
PM	0.31*	0.15	-0.15	-0.45*	-0.93*	-0.69*	-0.28*	0.21	0.05	-0.37*	-0.37*	0.04
WW	0.06*	0.01	0.05*	0.09*	0.13*	0.12*	0.03	-0.12*	-0.07*	0.06*	0.06*	0.11*

*Indicates effect is significantly different from 0 compared to January production ($P<0.05$). Company was included in the model as a fixed effect. ^aPSY–pigs/mated sow/year, LSY–litters/mated sow/year, TB–total born, SBM–stillborn and mummies, NBA–number born alive, PM–percent pre-weaning mortality, WW–weaning weight (lbs)

Table 19. Seasonal effect estimates for nursery facilities adjusted for start weight, start age, and days in nursery

	Year	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
PM ^a	-0.10*	0.15	0.31*	-0.02	0.01	-0.74*	-1.18*	-1.08*	-1.19*	-1.03*	-0.69*	-0.29*
EW	0.07*	-0.19	-0.33*	-0.59*	-0.60*	-0.72*	-0.63*	-0.52*	-0.36*	0.06	0.07	0.10
ADG	0.001*	-0.003	-0.008*	-0.011*	-0.013*	-0.017*	-0.015*	-0.012*	-0.008*	0.003	0.004	0.005
FCR	-0.007*	0.015*	0.007	0.002	0.006	-0.017*	-0.017*	-0.009	-0.003	-0.004	-0.003	-0.003

*Indicates effect is significantly different from 0 compared to January production ($P<0.05$). Company was included in the model as a fixed effect. ^aPM–percent nursery mortality, EW–nursery exit weight (lbs), ADG–average daily gain (lbs), FCR–feed conversion ratio (feed/gain)

Table 20. Seasonal effect estimates for conventional facilities adjusted for start weight, start age, and days in finisher

	Year	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
PM ^a	-0.10*	0.16	0.04	0.07	-0.03	-0.20*	-0.21*	-0.34*	-0.26*	-0.12	-0.27*	-0.11
FW	1.93*	-1.04*	-0.74*	-0.77*	-1.07*	-3.63*	-7.74*	-9.93*	-7.70*	-3.02*	1.52*	2.35*
ADG	0.016*	-0.009*	-0.008*	-0.009*	-0.015*	-0.031*	-0.066*	-0.084*	-0.063*	-0.027*	0.012*	0.021*
FCR	-0.031*	0.002	-0.004	-0.024*	-0.042*	-0.045*	-0.045*	-0.057*	-0.094*	-0.105*	-0.095*	-0.058*

*Indicates effect is significantly different from 0 compared to January production ($P<0.05$). Company was included in the model as a fixed effect. ^aPM–percent finishing mortality, FW–finishing weight (lbs), ADG–average daily gain (lbs), FCR–feed conversion ratio (feed/gain)

Table 21. Seasonal effect estimates for wean-to-finish facilities adjusted for start weight, start age, and days in finisher

	Year	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
PM ^a	-0.009	0.140	0.141	0.363	0.688*	0.805*	0.843*	0.197	0.376	-0.024	0.057	0.407
FW	0.94*	-0.64	-0.71	1.76*	0.71	-1.01	-2.40*	-4.37*	-2.49*	1.11	2.56*	3.35*
ADG	0.005*	0.004	0.005	0.011*	0.005	-0.006	-0.014*	-0.026*	-0.015*	0.007	0.014*	0.020*
FCR	-0.014*	-0.007	0.002	-0.001	-0.008	-0.014*	-0.030*	-0.037*	-0.054*	-0.063*	-0.058*	-0.029*

*Indicates effect is significantly different from 0 compared to January production ($P<0.05$). Company was included in the model as a fixed effect. ^aPM–percent finishing mortality, FW–finishing weight (lbs), ADG–average daily gain (lbs), FCR–feed conversion ratio (feed/gain)

Fig. 25: Pigs/Mated Sow/Year by Month

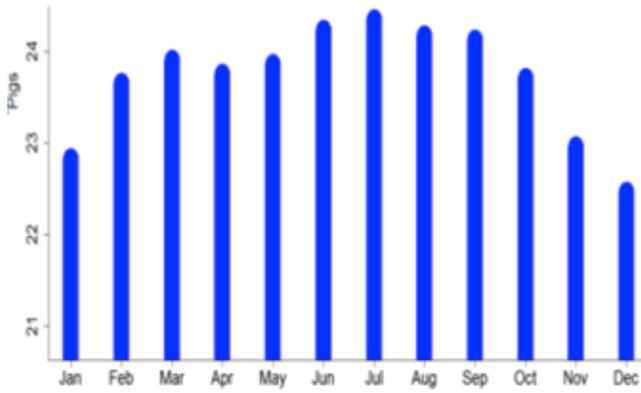


Fig. 26: Litters/Mated Sow/Year by Month

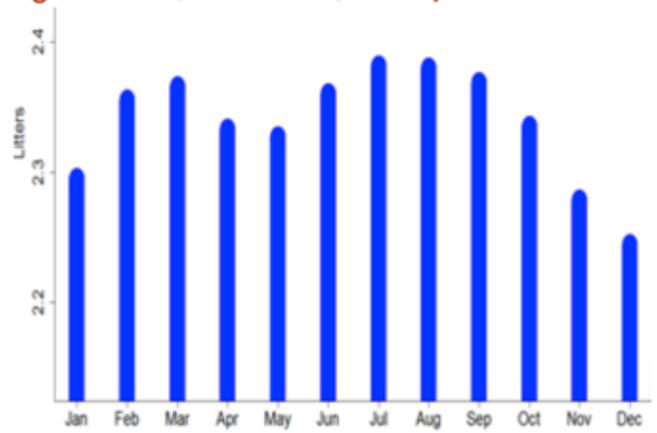


Fig. 27: Total Born per Litter by Month



Fig. 28: Stillborn and Mummies per Litter by Month



Fig. 29: Number Born Alive per Litter by Month



Fig. 30: Percent Pre-Weaning Mortality by Month



Fig. 31: Weaning Weight by Month

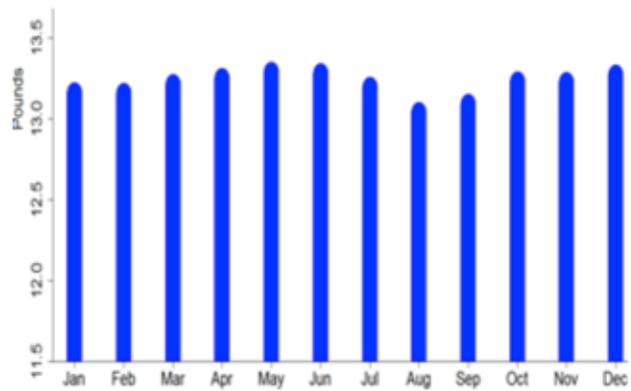


Fig. 32: Nursery Mortality by Month



Fig. 33: Nursery Exit Weight by Month



Fig. 34: Nursery Average Daily Gain by Month

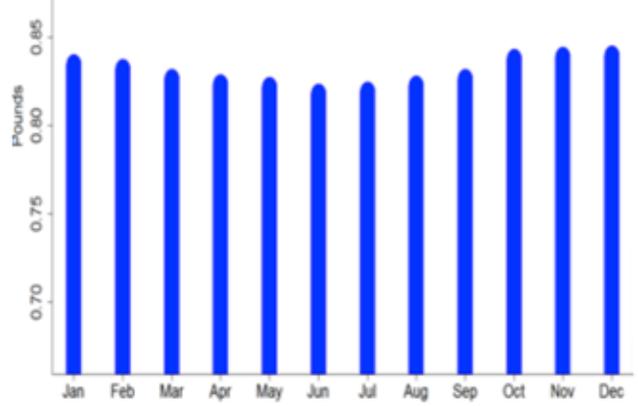


Fig. 35: Nursery Feed Conversion Ratio by Month

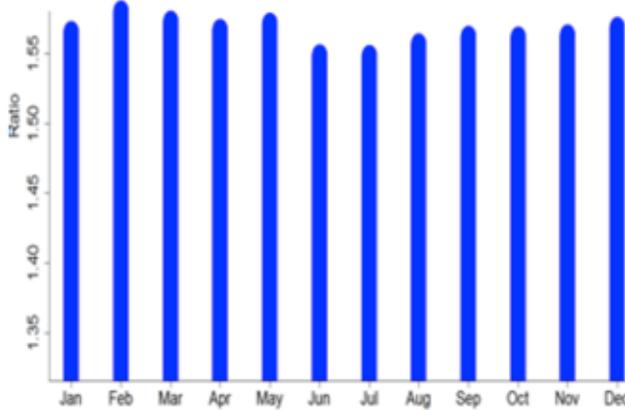


Fig. 36: Finishing Mortality -Conventional Finisher

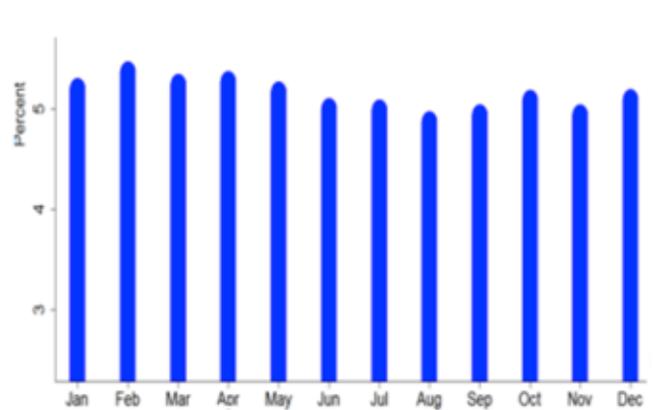


Fig. 37: Finishing Weight - Conventional Finisher

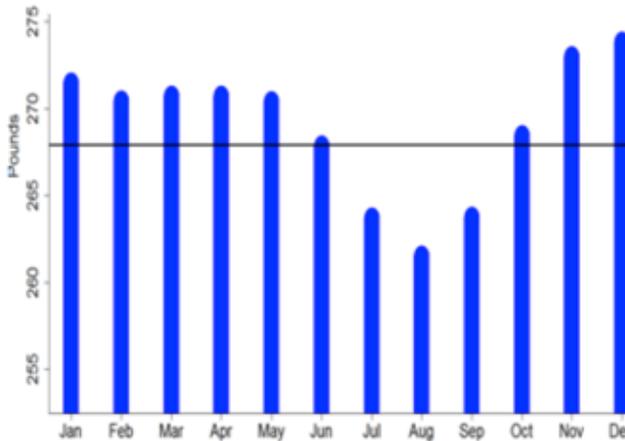


Fig. 38: Finishing Avg. Daily Gain-Conventional Finisher

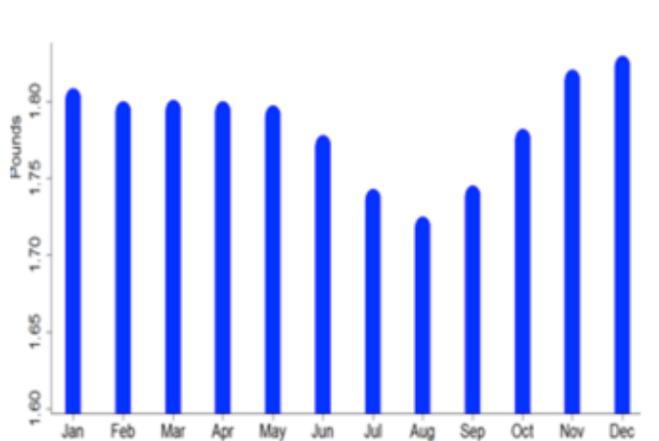


Fig. 39: Finishing Feed Conversion Ratio- Conventional Finisher



Fig. 40: Finishing Mortality - Wean to Finish

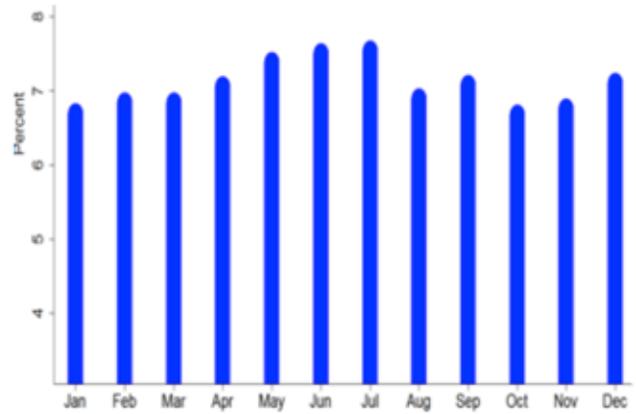


Fig. 41: Finishing Weight - Wean to Finish

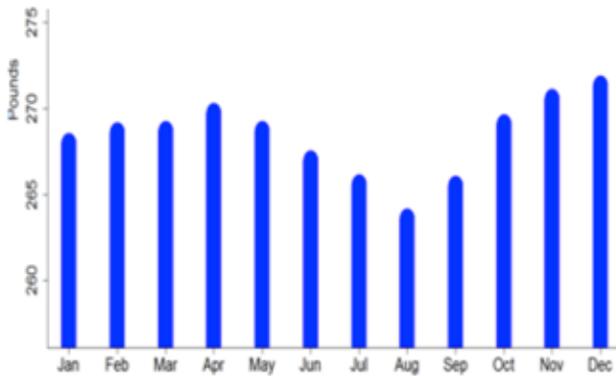


Fig. 42: Finishing Avg. Daily Gain - Wean to Finish

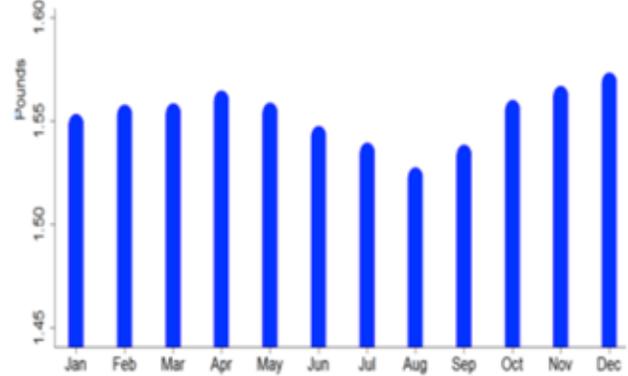


Fig. 43: Finishing Feed Conversion Ratio- Wean to Finish



National Pork Board
1776 NW 114th St, Des Moines, IA 50325
pork.org | 800-456-7675