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How we improved total born in our 100,000 sow production system

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Elite Swine grew rapidly from 1995 – 2003, during this period the sow herd grew from 35,000 sows to 120,000. This rapid growth required a tremendous amount of time and resources.

The team was focused on managing two parts of the production system; the existing or operational side and the growing or start up phase of the business. Once the rapid growth was complete we began to focus on improving the performance of our farms.

To be able to improve performance of the sow herd a number of things needed to happen. The major area of focus was on litter size.

To accomplish this we needed a focus to a shift in the program. Improving litter size on one or two or perhaps 5 farms can easily be done, however to accomplish this on 45 – 50 farms would require a shift in program management. This can be likened to turning a big cruise ship, the curve is slow and steady but is under control.

The project was focused on a few key areas:

- Gilt Management
- Weaning Age
- Employee Turnover
- Production Training
- Sow Nutrition

Gilt management

The area of Gilt Management needed to change. Our gilt management program was not focused on Critical to Quality Characteristics needed to improve production but was more in tune with meeting gilt orders needed to fuel expansion. Through surveys at the completion of our annual Production Meeting we found that there were a number of concerns regarding gilt management. It was apparent that the Production teams and the Genetic teams were not only on a different page they were holding each other responsible for the poor litter size in production. We pulled together a Genetic retreat where both the Production and Genetic teams would be out of the office for 1-2 days in a remote location where they would interact with one another and would engage in activities that would

require them to work as a team. This first day was an opportunity to focus on what some of the challenges in front of us and allowed us to present some key facts and figures to both teams. The second day was focused on creating a strategy that would take performance to the next level. We emerged from this meeting with a list of key items that would eventually roll up into the Gilt Management Strategy for the next 3 years.

We ship gilts from the gilt grow out to a quarantine for a 30 day period. The weights and ages of the gilts leaving the gilt grow out needed some focus. The demand for gilts had been high and consequently the weights and ages had been forced down. The Director of Production froze the replacement rate on all sow farms (excluding nucleus and multipliers) in order to balance supply and demand. Although not a popular decision it forced our barn managers to start thinking about how they manage their gilts better as there was not an endless supply. Our goal is to target an average delivery age of 185 days with a minimum of 180 and a maximum of 195 days.

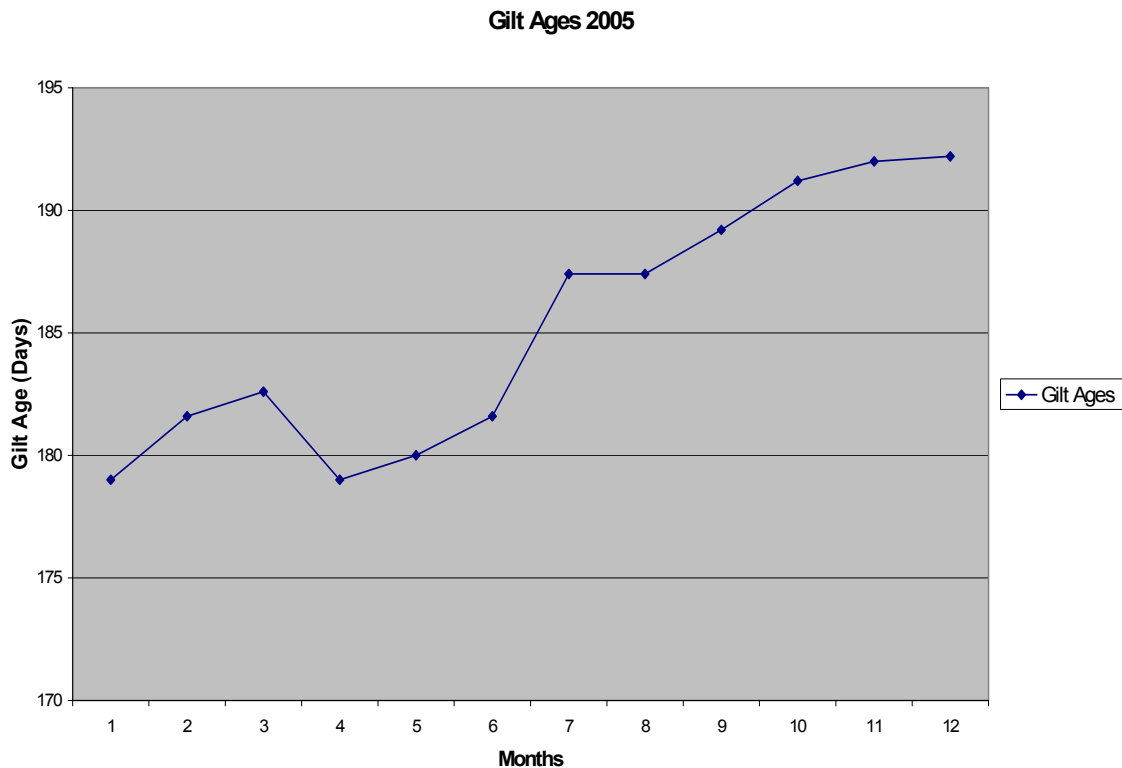
Weaning age

In March 2004, we were looking for ways to increase efficiency and/or reduce costs. One item that was re-visited was our method of transporting Isoweans from sow barn to nursery site. This had traditionally been done by the ESI Transportation department, using ESI trucks to manage the biosecurity implications of this pig movement. Weaning had been carried out 2 times per week in order to fill the truck trailer for the best economics. Protocols were now developed that allowed barns, where geographically possible, to transport their own production.

This allowed the use of smaller equipment such as tractors and livestock trailers, or converted school buses. This economic transportation of smaller loads led to the ability to wean four times per week, which we used to lengthen weaning age. A side benefit was a reduction in empty spaces needed to hold weaned animals, down from 2 rooms at 36 sows to 1 room. This allowed us to increase sow inventory.

The push to higher weaning ages was given further momentum by increased emphasis from the production team on hitting breeding target within a range of +/- 5%,

Figure 1 : Gilt ages 2005



along with better compression and utilization of farrowing crates. Any amount of either under or over breeding reduces weaning age. To reinforce the need for higher weaning ages and weights, we increased the minimum weight that was accepted into the nursery barns without discount, along with higher incentives for heavier weaning weights.

Net, we lengthened weaning age, increased weaning weight, reduced variation around weekly breeding numbers and increased sow inventory.

A snapshot of the variation in weaning age and the subsequent litter size is illustrated in **Figure 2**.

Farm staff turnover

The key to sow farm performance, sow, nursery or finisher is reliant on the staff employed at these facilities. A few years back a well-known Leadership Trainer coined the phrase "We are in the People Business, We just happen to be Raising Hogs". Elite Swine places a lot of emphasis on reducing farm staff turnover.

Using the Six Sigma philosophy we kicked off a few projects focusing on farm staff recruitment and retention. To be able to change the trend we needed to first understand what were the key reasons for farm staff turnover.

Our analysis told us a few things:

- Past livestock or agricultural experience and train-

ing both rank high as a determining factor for future success in farm employment.

- Although our data on foreign workers is based on a relatively small number at this time, (16) the early signs are very positive as all have met both the agricultural education and experience requirements and none have left our group to date.

Based on exit interviews and surveys conducted within the Six Sigma projects we determined that opportunities for improved farm employee retention rested within the following areas:

- Farm manager and supervisor leadership training.
- Farm employee orientation, training, and development.
- Farm work schedules
- Farm employee reward & recognition.

Many of these initiatives have been implemented and we have seen very favorable results as illustrated in **Figure 4**. In 2005 ESI employed over 350 farm employees.

Production training

One part of our key retention strategies was in the area of production training. Reviewing the balance between task and motivation development was a key undertaking from our Production Best Practices Team. Giving our

Figure 2: Weaning and subsequent litter size

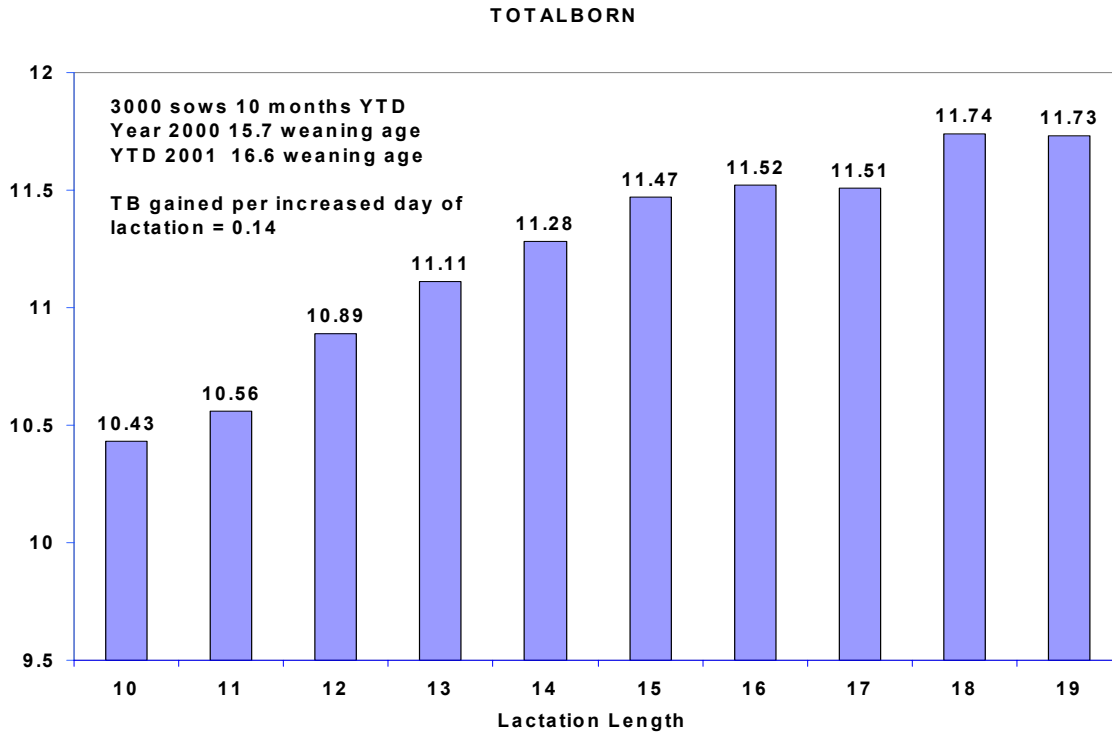
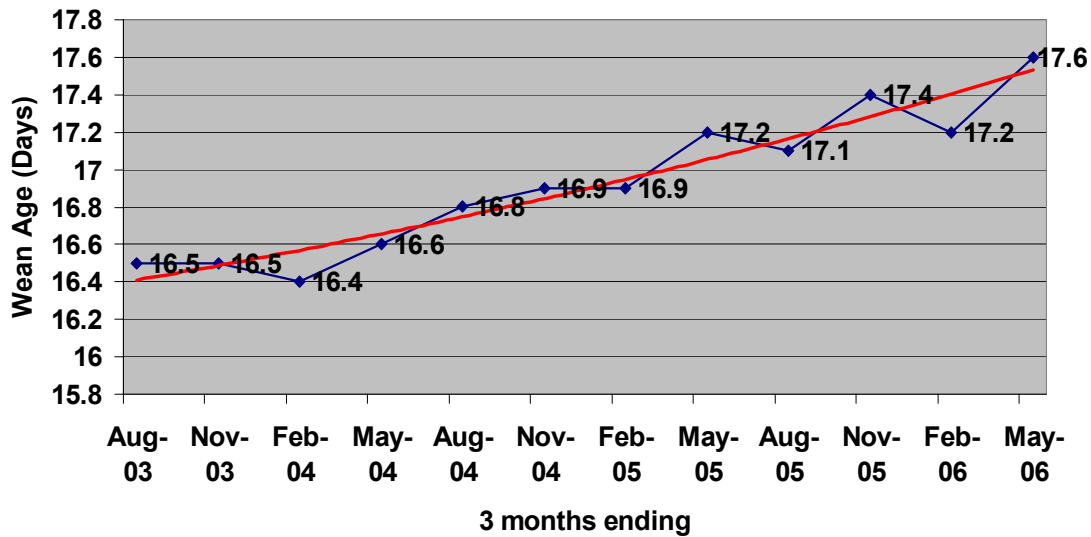


Figure 3: Weaning Ages May 03- May 06

Weaning Age (May 03 - May 06)



employees the tools to work with was very important to improving staff morale. Improving performance is the first key step in developing stable teams.

Elite Swine has assembled a very solid portfolio of courses and SOP manuals focused on improving the technical skills of all production staff as well employees within Elite Swine who worked in non-production roles.

SOP Manuals – A manual was developed and distributed

for each level of production. Every farm has either an electronic or hard copy of the manual to use a resource.

Production Training Courses – The following courses are delivered in all regions:

- General Introduction (Industry, Swine Management, ESI overview)
- Breeding and Gestation Management

Figure 4: Farm staff turnover (%)

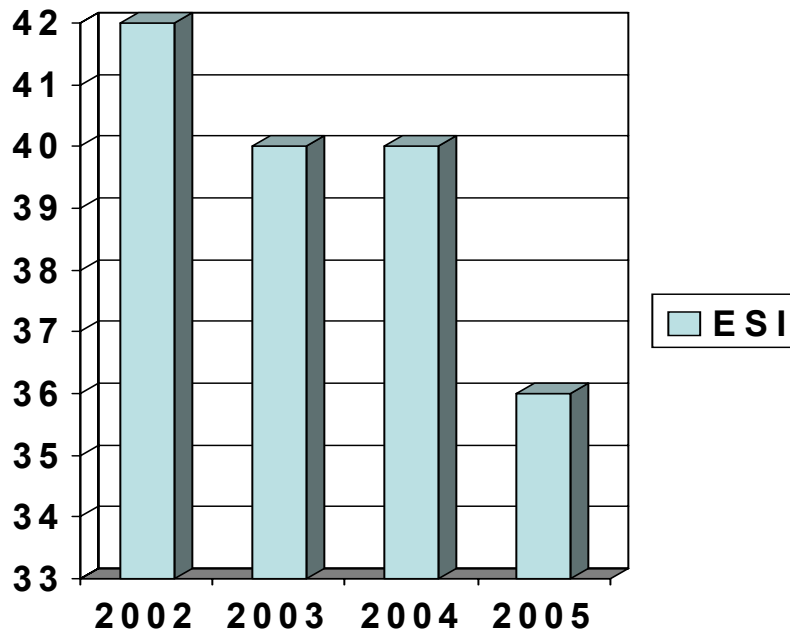
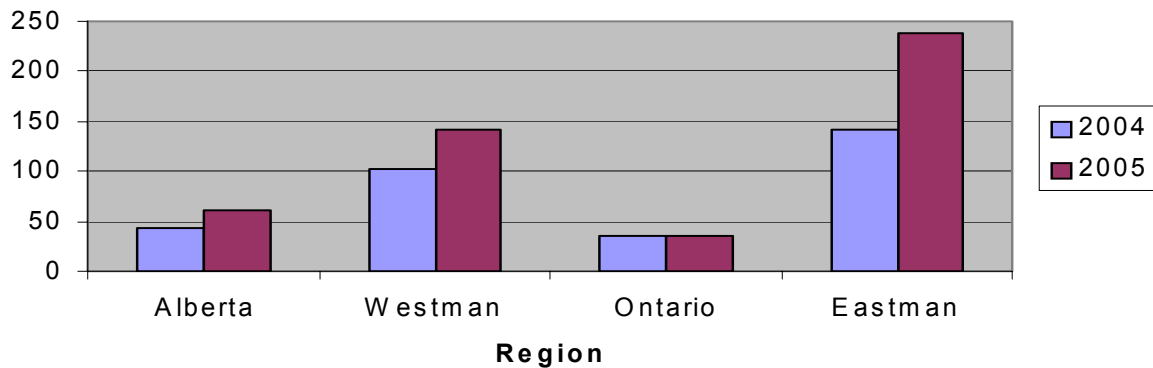


Figure 5: Number of employees attending training courses

**Production Training
Course attendees**



- Farrowing and Piglet Care Management
- Nursery Management
- Finishing Management
- Health and Medication
- Stockmanship (Videos and Manuals)
- In Barn Training Manual and Orientation Barn – soon to be completed.
- First Aid
- Health and Safety

We have pushed hard to ensure that all staff attend the courses designed for their level of production. In many cases we have conducted the courses right at the farm so

as to ensure that all staff have been able to attend. The number of employees attending courses increased in 2005 as a result as illustrated in **Figure 5**.

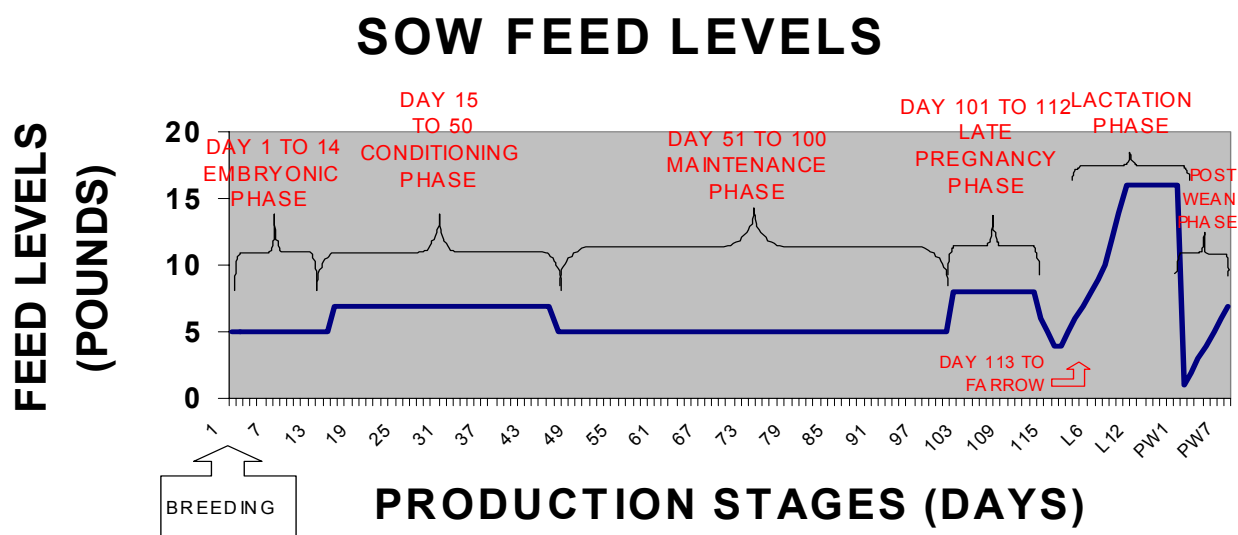
The number of employees attending production-training courses appears to be trending down in 2006; this can be largely attributed to decreased turnover.

Sow nutrition and feeding strategies

The Director of Nutrition has put forward a feeding strategy for Sows in each stage of production as illustrated in **Figure 6**.

Our area of focus within sow feeding was the element of consistency. The key message we had to deliver was that whether it is a small sow barn or a large sow barn,

Figure 6: Sow feed levels by stage of production



all sows must be treated as individuals. When it comes to reviewing feed intake data, averages do not tell the true story. Each member of our service team attended a training course held by the Director of Nutrition, titled Nutrition 101. In this course they became aware of not only key ingredients and their levels used but an in depth review of the sows nutrient requirements, feeding strategies and cost management.

One of the tools available to the service team as well as the Farm Managers is a 1 page laminated gestation sow feed intake guide developed with the help of an “in-house” gestation sow model developed by our Director of Swine Nutrition, Sow Production Managers and the Veterinary Team. This guide helps the team to follow the feed requirements by stage of gestation for each parity with provision for adjustments in backfat and or body condition.

Focusing on the basics cannot be over emphasized. Keeping it simple and being consistent when feeding dry and lactation sows will go a long way to improving sow performance:

- Follow post breeding (gestation) phase feeding recommendations
- Check water intake. Daily usage, flow rates, etc.
- Link other chore routines with adjustments to feeding levels, i.e.) preg checks, vaccinations, etc.
- Avoid any stress to the sow during critical feeding phases, especially in the first 14 days after last breed—before embryos are implanted.
- Treat every sow as an individual.
- Calibrate weights of volumetric feed in drop boxes. Do not rely on the pound levels indicated on the drop box.—especially when using pelleted diets which are

denser than mash

- Utilize body condition scoring or back fat measurements to help with feed adjustments.

The old rule has always been that when it comes to sow feeding you make it or break it in lactation. Feeding lactation sows can be called an art as the employee must be able to manage the sows’ intake through lactation by recognizing signs of underfeeding or overfeeding before the sows’ intake crashes. The condition of these sows before they enter the farrowing crate is crucial.

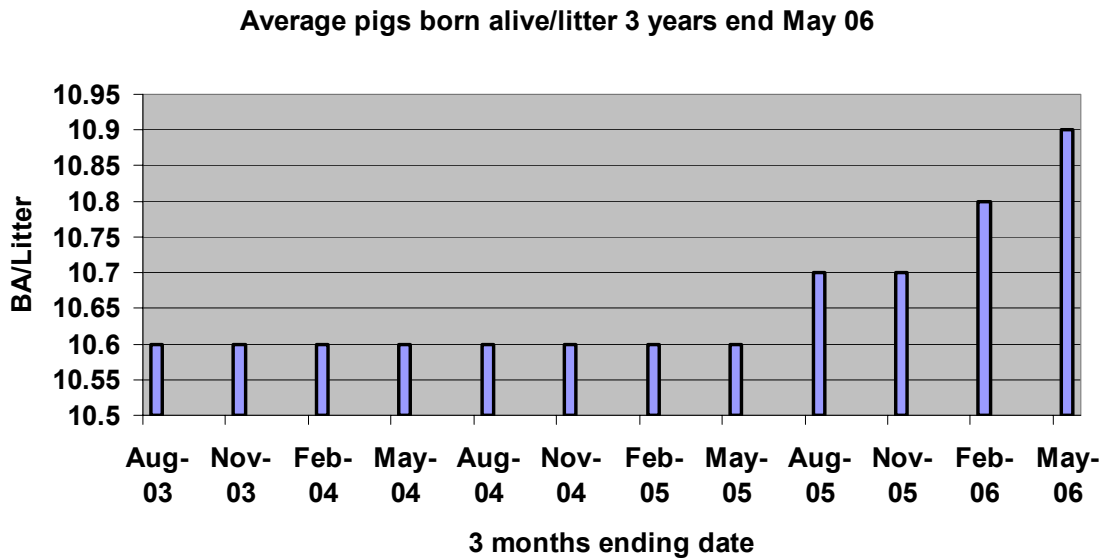
- Over conditioned sows – will result in increased still births and low appetites
- Under conditioned sows – may be catabolic and will have an increase in low viable and splay legged piglets, and may compromise the # of pigs born in the following litter.

How the sows are fed in lactation will play a key role in piglet weaning weights, preparing the sow for her next litter as well as determining the wean to first service interval.

The sow nutrients in lactation are key to optimal performance. The sow premix typically carries these key nutrients. For several years many feed companies have utilized one sow premix for all sow diets and then formulated them accordingly. There is a lot of new technology becoming available and our research has told us that we only need to implement some of these technologies to lactating sows.

A sow “Repro” Premix designed to be fed to lactation sows only was developed by our Director of Swine Nutrition based on our own Maple Leaf Ag Research results and other external research was rolled out across all sow farms. As new technology becomes available the premix

Figure 7: Average pigs born alive (June 03 – May 06)



becomes the vehicle or a home for improved lactating sow nutrition. this allowed us to be creative and very cost effective with vitamin and mineral sources and levels, enzyme technology, probiotics, etc.

A unique research based energy and amino acid top-dress has been employed. It is fed to all first and some second parity lactating sows year round and to older sows during summer months. This top-dress bridges the gap between desired feed intake and actual. Also a summer lactation diet is used for all lactating sows. A very recent large Six Sigma study at our Sow Research farm has clearly shown the important and statistically significant correlation between feeding level from day 6 to wean with the number of pigs born alive in the subsequent litter.

Summary

Through dedicated focus to the areas of Gilt Management, Weaning Age, Employee Turnover, Production Training and Sow Nutrition Elite Swine has been able to make significant improvement in its litter size. The trend is upwards and we continue to shoot towards a higher goal each year.

To be able to achieve the results illustrated in **Figure 7**, a systems approach was needed. We were confident in changing the performance on a few farms but to shift the entire program (100,000 sows plus) required systematic change. As we move our farms towards 30 pigs/sow/year we need to continue to focus on the key drivers of litter size.

