

## Relating EBX Semen to Litter Size: A Testimonial

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### Introduction

Almost a quarter century ago a considerably less seasoned Reproductive Physiologist was given access to EBX sires in AI Centers located in North Carolina. Company sows were mated with semen from ten sires during the rapid expansion of AI partially due to availability of other sire lines and as a comparison prior to purchase. At the end of 2015, in a similar shortage of semen after a boar stud broke with PRRS, our current system gained access to EBX semen through contracts with Choice and a local AI Center. In both cases, numeric increases in farrowing performance were recorded in performance records coincident with sows mated to EBX sires.

### Materials and Methods

Win Productions coordinated the use of EBX semen in farms where feed companies and growers were familiar with the performance of pigs from these sires. Three of nine sow units in our system (8,800 sows: avg. 316 farrowings/week) got EBX semen. Two of these units were operating as PRRS positive units. The standard sow program is older sows are PIC lines and gilt insertions are DNA females. The semen was available from a sister stud that is owned and managed similarly to the unit supplying our other units. The analysis performed on total and live born is a standard Control Chart program in PigKnows®. It is a time series analysis program based on processes in continuous flow. Statistical events in this program are noted when a process exceeds upper or lower critical limits or when 7 consecutive points in production are above or below the process average. Farrowing information was reported weekly for 13 plus weeks before 5.200 were switched back to the original boar line. Gilts challenged from earlier breaks and/or from serum inoculation were used. Due to semen availability and gilt matings, EBX semen was rerouted to a 4<sup>th</sup> sow farm (2800 sows) for the remainder of 2016.

### Results

Sows began farrowing in early May of 2016 from these matings. Chart 1 is the analysis of the **average total born per litter recorded each week for 26 weeks**. The vertical axis is total born and the horizontal axis is the start date of each week (0214 = Feb 14, etc.). The average total born per litter for the entire 26 week period included was 13.735 pigs per litter. **Beginning with data point 12 (13.93), a statistical improvement in litter size was noted. A similar pattern was noted for the average number of pigs born alive each week.** The average Total Born per litter per week was 13.24 for the 13 weeks prior to the semen change and 14.49 pigs per litter for the next 13 weeks. The averages for pigs born alive per litter for each period were 11.78 and 12.90, respectively.

The total born and born alive for gilt litters on the farms switched away from EBX semen are currently 1.5 and 1.9 pigs lower than our average for all gilts in our system, respectively. Early farrowings from Farm 4 show a similar relationship as earlier control charts. **Gilts on the farm 4 (switched to EBX semen) are farrowing 1.6 more pigs total born per litter than our company average for gilts.**

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## Discussion

It is noted here that total born in general and live born in particular are influenced by a huge number of factors. Especially notable is the potential for seasonal impacts on sows farrowing early in the period compared to later. Possible seasonal variance is challenged by an overall improvement in the average total born for the entire sow system of 0.3 pigs per sow during this period. This change only explains part of the difference and there was no improvement reported as a statistical bell ringer.

As noted in the description of units, two were operating PRRS positive. Production personnel will certainly take credit for health improvements due to good management and time post breaks. The third unit was and remained PRRS negative for the entire period. Individual data from the 3,600 negative sows was similar (same endpoints) as the positive units. Collectively or individually, there was not a change over time after starting the EBX semen until it was removed.

Additionally, the reason the data stopped here was that we started a breeding project on the positive units the last week in May. The semen source was switched back to the original lines because of volume demands from the stud. The introduction of EBX semen is coincident to an improvement in both total and live-born pigs. We have not farrowed enough weeks to use the time-series standard.

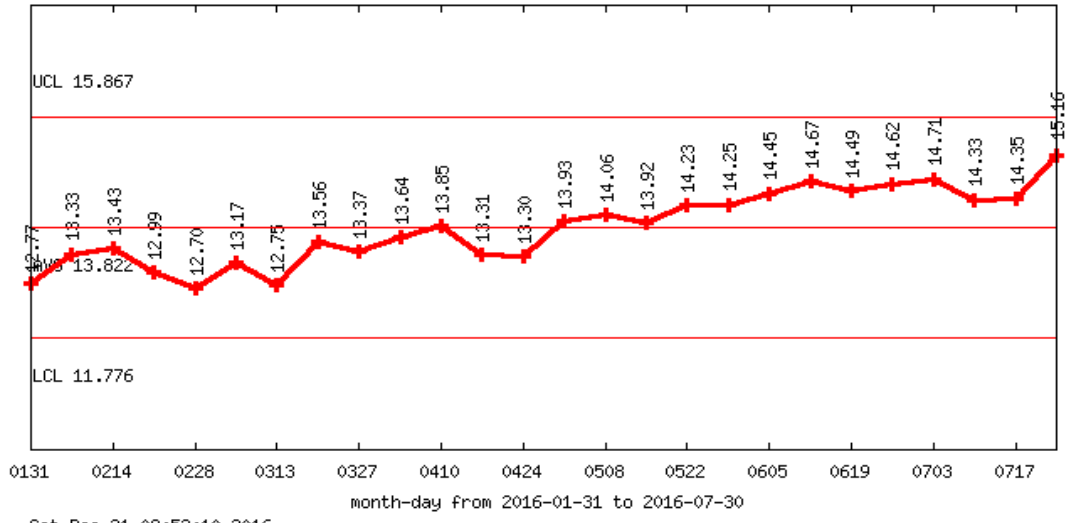
Just as there was 25 years ago, there are today a lot of reasons why people use a particular boar line. Production improvements such as fertility, livability of the pigs in different situations, finishing performance or carcass merit all weigh in the decision. In earlier days, with intake limitations in sows, and nutrient challenges in diets, and less skill and fewer tools in farrowing units, more pigs born alive often resulted in fewer pigs weaned per litter. Production systems often terminate breeders, farrowing personnel, or even upper management for smaller differences in litter size than discussed here.

In our hands, even though not generally part of our business, EBX sired pigs are leading in carcass weight and merit in recent cutouts. A study in the hands of others<sup>3</sup> shows that EBX sires performed when fed more expensive, pelleted, diets or diets balanced using least-cost formulations. We have had no issues sending these lines to any of the packers that we are selling to today. If considered equal at the end and more productive in the sow unit, genetic line(s) that can be linked to improved fertility seems offer a competitive advantage.

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<sup>3</sup> Choice Genetics, January 2016 Comparison Data

Control Chart for avg totalborn/litter  
(farm: SURE\_WIN+VICTORY\_LANE+WIN\_EDGE; gline: ALL; parity: ALL; period: 1 week)



Sat Dec 31 09:52:10 2016

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