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The role of influenza on growing pig performance

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Introduction

Swine Influenza virus (SIV) continues to be a significant and more problematic pathogen in the growing pig. As a component of the Porcine Respiratory Disease Complex (PRDC), SIV infection can have a detrimental impact on the performance in the grow/finish stages of production. The economic ramifications of Swine Influenza infection are difficult to measure in the field setting. Typically pigs are infected with more than one pathogen. Therefore, to measure the impact of one pathogen on the performance of a group is rarely achievable. In this presentation I will describe two systems that have many like characteristics, although one difference is the prevalence of infection with SIV. In an attempt to measure the impact of SIV in a population, I will compare performance of the two systems over the same period of time.

Description of the systems

Both systems are traditional nursery and finisher multisite systems with 10,000 head nurseries and 10,000 head finishers. Facilities within the systems are located very near each other with the average distance less than 1/2 mile from each 10,000 head site. Genetics are identical between the two systems. Both sow farm systems have an off-site gilt replacement unit where gilts are raised in isolation away from the commercial progeny of the farms. Boars enter the system into Gene Transfer Centers through an isolation unit and strict testing program. Health of the

systems are similar, Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) positive and *Mycoplasma hyopneumoniae* positive, with both having *Haemophilus parasuis* and *Streptococcus suis* challenges in the nursery phases. Both systems vaccinate sows post-breeding with SIV vaccine. The one exception that dramatically affects performance is System A does not experience clinical challenge or infection with SIV in the growing phase, where System B has what I would describe as endemic SIV in the nurseries.

Serology for SIV

Routine monitoring of both systems involves tagged serial groups of pigs that are sampled 4-5 times through the growing phase. See **Figures 1 and 2**. Without tagged serial groups, it is very difficult to interpret SIV serology due to the pig to pig variation of immunity. All serology is done at the University of Minnesota Veterinary Diagnostic Lab. Vaccination of pigs can also make the interpretation of serology difficult. In my experience having an “end point” bleed or a sample taken at the time the first pigs in the group are marketed can give you an indication if there has been active infection from SIV. We have experienced a virus in system 2 that did not produce any titers on the HI (rH1N1) test performed at MVDL. This virus typed as a H1N2 virus. Once we made a HI test antigen from our herd isolate we were able to identify that groups were being infected by that virus and de-

Figure 1: H1N1 Serology.

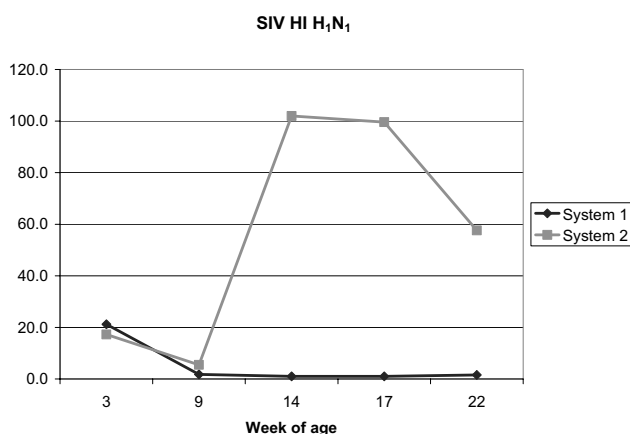


Figure 2: H3N2 Serology

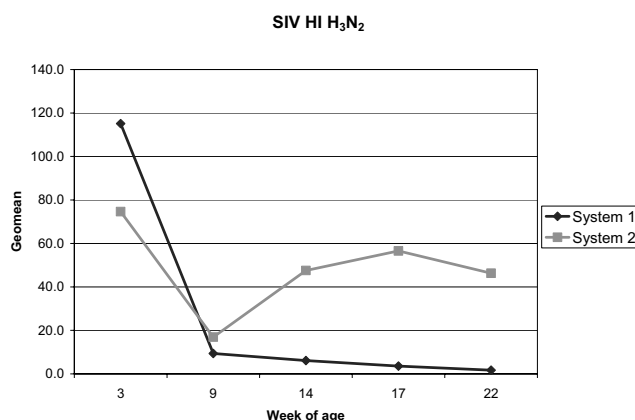


Table 1: Performance comparison.

		Wt In	Wt Out	DOF	Mortality%	ADG	FC
System 1	Nursery	11.0	62.0	50.5	1.7	1.0	1.4
	Finisher	63.2	279.2	102.6	2.8	2.1	2.6
System 2	Nursery	12.6	55.5	48.8	2.7	0.9	1.6
	Finisher	56.3	284.9	114.9	4.7	2.0	2.7

termine when vaccination could be implemented. This situation was recently described by Erickson et al (1).

Data in **Table 1** consists of closeout summaries from each system for 2004 and Qtr 1 2005. The number of pigs represented is 42,518 and 77,330 for systems 1 and 2 respectively. The Days on Feed (DOF) differ among system where the pigs in system 1 had a lower average market weight and pigs in system 2 enter the finisher at a lighter weight. The clinical signs of SIV in system 2 occur in the late nursery phase where the performance is most affected. The mortality has the largest variance with a sum nursery/finish mortality for system 1 at 4.5% and system 2 at 7.4%. There is a variance of 2.9% total mortality for the growing phase between systems 1 and 2. One parameter not listed is cull %; this is not equally measured and could not be compared due to marketing discrepancies among the different plants where these pigs are processed.

The next step in this comparison is determining what these performance differences bring to us economically. This information will be presented during the conference.

Summary

It is difficult to determine the cost of disease by SIV due to the multifactorial nature of most respiratory problems in the growing phase. In this paper I have tried to compare two systems that are otherwise virtually identical in all aspects of genetics, nutrition, facility design, and management. But they do differ in the area of health with System 1 having no clinical signs or exposure to field strain SIV infection and System 2 having SIV infection consistently present among all nursery groups.

References

1. Erickson, GA, MR Gramer, RJ Webby. 2005. How to evaluate herds using swine influenza serology. *Swine Health and Production*. Jul-Aug, Vol 13, 4:222-224.

