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Simplified seroprofiling approach for *Lawsonia* vaccination scheduling

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Introduction

Vaccination of pigs with an attenuated live oral vaccine (Enterisol® Ileitis; Boehringer Ingelheim Vetmedica, Inc., St. Joseph, MO, USA) effectively prevents and controls ileitis caused by *Lawsonia intracellularis* when administered at least 3 weeks prior to infection.¹ Vaccination scheduling can be optimized by using seroprofiling to identify the onset of *Lawsonia* infection (ie a low seroprevalence).² Seroprofiling typically requires sampling of multiple age groups, either in a cross-sectional or longitudinal approach. To prevent inactivation of Enterisol® Ileitis, antimicrobial medication is precluded for at least a 7-day period surrounding vaccination. In US production systems, the last half of the nursery phase (6-10 weeks of age; “Period 1”) and shortly after finisher placement (10-12 weeks of age; “Period 2”) are periods during which medicated feed flow can typically be adjusted to facilitate immunization. The purpose of this study was to assess a simplified seroprofiling method using a single age group of pigs to determine if the onset of *Lawsonia* exposure occurred in either the nursery or finisher so that vaccination could be appropriately scheduled.

Materials and Methods

Thirty pigs at 1 to 2 weeks post-placement into finishing sites in 2 separate production flows were randomly blood sampled for *Lawsonia intracellularis* ELISA testing (SVANOVA Biotech AB, Uppsala, Sweden). Three cohort groups (sites) from one flow and two from the other flow were sampled. A sample size of at least 30 was tested from each site to achieve 95% confidence of detecting 10% or greater prevalence in a population of more than 1000 pigs.³ Fecal PCR testing supplemented the serum ELISA by screening for potential *Lawsonia* shedding prior to seroconversion. Only characteristic, diarrhetic manure samples were submitted. Both flows used a dietary antimicrobial program of 220 ppm

chlortetracycline followed by 22 ppm lincomycin through the nursery and no dietary antimicrobials in early finishing.

Results

Lawsonia ELISA-positive pigs were detected in all 5 cohorts sampled at 1 to 2 weeks placed into finishing. The percent positive per group ranged from 3 to 33%, with a mean of 12% (Figure 1). All 20 fecal samples submitted tested negative by *Lawsonia* PCR.

Figure 1- ELISA Number Positive / n

| Group | 1 | 2 | 3 | 4 | 5 |
|--------|------|------|------|------|-------|
| Result | 1/30 | 2/30 | 2/37 | 3/30 | 10/30 |

Discussion

Seroprofiling at 1 to 2 weeks after finisher entry in single age groups of pigs identified the onset of *Lawsonia* exposure to be in the nurseries. Wide variation in exposure was observed within the system illustrating the importance of sampling multiple batches of pigs to validate associated decisions. Had seroprofiling been done in only the first batch of pigs and interpreted as a potentially false positive result, vaccination may have been scheduled after onset of infection (Period 2), thereby not providing full benefit to the previously infected subpopulation. Vaccination should be scheduled based upon the youngest age at which infection is observed, in this case Period 1. Alternatively, adjustments in the nursery antimicrobial program to delay *Lawsonia* infection could be made to facilitate vaccination early in Period 2.

References

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