Field evaluation of Ingelvac Circoflex® on growth performance of pigs in a subclinical PCVAD herd

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Objectives

The objectives of this study were to 1)determine the impact of one-dose of Ingelvac CircoFLEX® (Porcine Circovirus Type 2 vaccine) on growth performance of pigs in a population subclinically affected by porcine circovirus associated disease (PCVAD); and 2)determine if population weight distribution can be affected by immunization against PCV2.

Materials and methods

Pigs were sourced from a high health, PRRS negative sow source without clinical signs of PCVAD. PCVAD had been previously confirmed histologically in individual pigs from this system. The trial took place over a 119 day period from June to October 2008. On Day 0, 600 weaned pigs (21 days of age) were randomly selected, sorted by size (large, medium, small) and sex, and placed into nursery pens. Three hundred pigs were randomly selected to receive a 1 mL dose of Ingelvac CircoFLEX vaccine on Day 0 and 300 pigs served as non-vaccinated controls with individual pig designated as the experimental unit. Pigs from both groups were commingled within nursery pens. Individual body weights were taken upon entry into the nursery (Day 0), prior to leaving the nursery (Day 35), and on a set date in finishing (Day 119). Cull pigs were defined as weighing less than 180 lbs. on Day 119. Pigs were transferred to finishing pens on a single finishing site with no intention of maintaining nursery pen integrity. Ninety three pigs were randomly selected and serially blood sampled for serologic testing at six time points for PCV2, PRRS, Salmonella, Lawsonia, and Mycoplasma. Multiple regression models were used to analyze the performance data (JMP 6.0.0). Chi-square analysis was used to compare mortality and cull rates. Non-parametric Wilcoxon rank sums test was used to test the log transformed quantitative PCV2 PCR values from each bleeding age.

Results

Vaccinates had significantly lower PCV2 viral loads at 12, 18 and 22 weeks of age (data not shown). Vaccinates out performed non-vaccinates in weight gain and average daily gain (ADG). Day 0 weights did not differ between groups (16.17 lbs vs. 16.17 lbs; $P = 0.97$). Day 119 weights were statistically different with vaccinates' mean weights being greater (227.25 lbs vs. 220.86 lbs; $P < 0.0006$). ADG did not differ between vaccinates and non-vaccinates for Day 0-35 (0.99 lbs vs. 0.99 lbs; $P = 0.91$) but Day 36-119 differences were highly significant (2.10 lbs vs. 2.02 lbs; $P < 0.0001$) in favor of vaccinates. Wean to finish mortality rates did not differ significantly between treatment groups, with 3.01% (9/299) in vaccinates and 3.68% (11/299) in non-vaccinates. Cull rate significantly differed with vaccinates (4/299, 1.34%) having fewer culls than non-vaccinates (20/299, 6.69%). The weight distribution at day 119 had a significant shift of the vaccinated population to the right with mean and median body weights both increased (Figure 1).

Discussion

The one dose PCV2 vaccine significantly increased growth rate (weight gain and ADG) in a population of high health pigs which do not meet the case definition of (clinical) PCVAD as defined by the AASV PCVAD Committee. Consistent with a diagnosis of subclinical PCVAD, the mortality rate did not significantly differ and this was not a primary complaint of the producer. However, the culling rate was significantly reduced by vaccination. The right shift and narrowing of weight range distribution for the vaccinated group of pigs illustrates the biologic and implied economic benefit of immunization. Overall, this study indicates that in the absence of obvious clinical PCVAD signs, PCV2 virus still induced a detrimental effect on productivity of non-vaccinated pigs.

Figure 1: Day 0-119 weight gain distribution by treatment group