

## The effects of sire genotype and the porcine circovirus type 2 vaccine on the growth performance of pigs from weaning to slaughter

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**Introduction** Crossbreeding is common practice in commercial pig production as one way to increase lean growth and improve meat quality (Visscher *et al.*, 2000). Reducing disease is another way to help improve growth rate in pigs. Porcine circovirus type 2 (PCV2) has devastated the pig industry in recent years. PCV2 infection increases mortality and reduces growth rate as it acts as an immunosuppressant thereby making pigs more susceptible to co-infections (Kixmüller *et al* 2008). Keeping disease at low levels has been achieved by improving husbandry standards, biosecurity, minimising presence of other pathogens and use of antibiotics. However vaccines against PVC2 are now available. The aim of this study was to investigate the effects of sire genotype and PCV2 vaccine on growth performance and body composition of pigs.

**Materials and methods** A 2x2 factorial design compared sire genotypes (Hampshire and Large White) and vaccination status (vaccinated or not). A total of 264 pigs were weaned at 28±4 days. Within each litter half of the pigs were vaccinated against PCV2 at three weeks of age. Pigs were then allocated to pens based on their genotype and vaccination status and balanced for weight and sex. Pigs were individually weighed at weaning and then at five, six, seven, 10, 12, 14, 15, 16, 17 and 22 weeks of age and prior to slaughter. Weekly pen feed intakes were recorded and feed conversion ratios (FCR) calculated throughout the trial. All pigs were given daily health checks (recording any ill health). Pigs were scanned for body composition at slaughter using an AUTOFOM scanner. A General Linear Model (Minitab version 14.0) was used to analyse any differences in growth performance, health performance and feed intake between the pigs.

**Results** Throughout the trial Hampshires had a higher average daily intake (ADI) and average daily gain (ADG) when compared to Large Whites (Table 1). There was no difference in FCR between genotypes. Vaccination had no effect on growth performance. However ADG at week 16 was higher (P=0.069) for vaccinated pigs compared to their non vaccinated counterparts (Figure 1). Although there were no significant differences in mortality between treatments, mortality as a whole was down by 9.3% compared to on farm mortality over previous years. Due to a faster growth rate Hampshires were 8.4 days younger at slaughter (P<0.001), however Large Whites were leaner at slaughter (P=0.010). Vaccinated pigs were on average 2.2 days younger at slaughter (P=0.084). No differences in carcass composition between vaccinated and non-vaccinated pigs were found. Large Whites required more antibiotic treatment throughout the trial (H=4; LW=19, P<0.05). Non-vaccinated pigs required more antibiotic treatment although this difference was not significant (Vac=8; Non=15, P=0.274). No two-way interactions were seen during the trial.

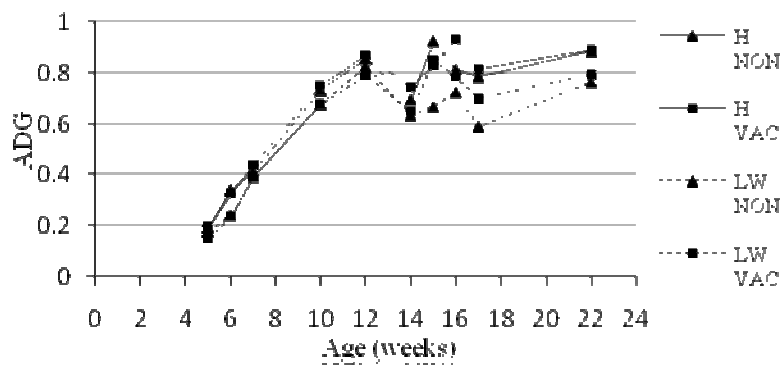


Figure 1 ADG 5-22 weeks of age

Table 1 ADI and ADG from weaning to finish

	H	LW	
	ADI	ADI	
Stage	kg/day	kg/day	P
Weaner	0.397	0.330	<0.001
Grower	1.216	1.106	0.001
Finisher	1.607	1.447	<0.001
	ADG	ADG	
Stage	kg/day	kg/day	P
Weaner	0.314	0.259	0.030
Grower	0.789	0.734	0.002
Finisher	0.859	0.747	0.001

**Conclusions** The results clearly show differences in performance between genotypes. Hampshires performed better than Large Whites in terms of ADG and age at slaughter due to a higher ADI and required less antibiotic treatment. There was no difference in FCR between genotypes. Although growth performance was better for Hampshires, Large Whites were in fact leaner at slaughter. There was no difference in body composition between vaccinated and non-vaccinated pigs. Disappointingly vaccination against PCV2 had no significant effect on growth performance or health status. However pigs moved buildings at 15 weeks of age so the higher ADG seen for vaccinated pigs at 16 weeks may indicate that non-vaccinated pigs were less tolerant to the stresses involved. A lower mortality rate was seen throughout the trial compared to previous years suggesting that on farm disease may have been lowered as a result of half the pigs on farm being vaccinated against PCV2. This research includes the preliminary results of a larger trial currently being carried out.

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### References

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