Assessing sow herd PCV2 stability utilizing colostrum, placental umbilical cord serum and placental umbilical cord swabs

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INTRODUCTION

Sow herd instability has been diagnosed on numerous farms in the U.S. during diagnostic investigations. Vertical transmission of PCV2 has previously been described using placental umbilical cord serum (PUCS), swab of the umbilical cord, colostrum, presuckle serum and fetal tissues. With each there are drawbacks on time, labor, biosecurity, safety and animal handling. The goal of this project is a comparison between sensitivities of PUCS, swab of the PUC and colostrum samples.

MATERIALS AND METHODS

Paired PUCS and colostrum (n = 659) as well as unpaired PUCS (n = 692) and colostrum (n = 669) sample results from eight sow herds (A-H) were compared as a litter evaluation. Five of the eight sow herds (C-D,F – H) compared paired (n = 162) PUCS and swabs and unpaired PUCS (430) and swabs (162). To collect PUCS, expelled placenta was inverted and 3 – 4 umbilical cords (attached to the placenta and not visibly contaminated) were milked into a single serum tube. A swab of the same umbilical cords was taken (Herds C-D,F-H). Colostrum (1 – 3 ml) was manually milked into a snap cap tube. PCV2 TaqMan Real-time PCR (HMC, Ames, IA; detection limit of < 3.5 genomic equivalents/reaction) was performed on individual PUCS (tested in triplicate), swabs and colostrum. A production health survey was conducted on all herds and a subset of sows from each herd were measured using PCV2 ORF2 ELISA (HMC).

RESULTS

Utilizing PUCS as the gold standard, colostrum had 67 % sensitivity (95 % CI, 48 – 92) and swabs had a 72 % sensitivity (95 % CI 55 – 85 %). For paired samples, percent positive ranged from 0 – 52 % (PUCS), 0 – 48 % (swabs) and 0 – 19 % (colostrum). For unpaired samples herds G and H, PUCS had significantly more positives. There were no significant differences in low positive (0 – 4 %) sow herds (A – F). Only four of six low positive herds had positive PUCS samples (B, D, E, F). There were no differences in SP ratios as measured by ELISA, regardless of PCV2 stability.

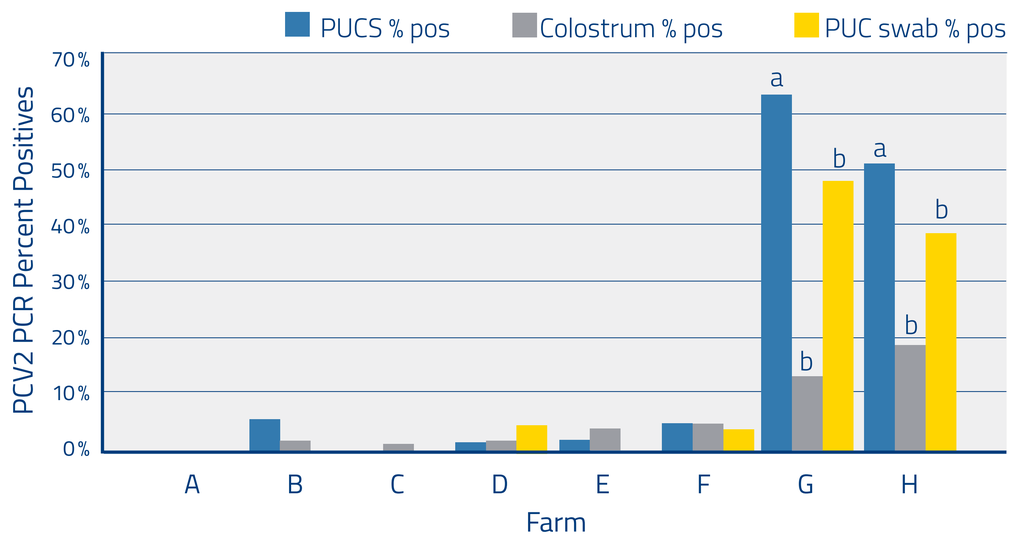
Table 1: PCV2 PCR Results for Paired PUCS and Colostrum Samples

		Colostrum		
		+	-	Totals
PUCS	+	22 (3 %)	65 (10 %)	87
	-	11 (2 %)	561 (85 %)	572
	Totals	33	626	659

Table 2: PCV2 PCR Results for Paired PUCS and Swabs

		Swabs		
		+	-	Totals
PUCS	+	28 (17 %)	22 (14 %)	50
	-	11 (7 %)	101 (62 %)	112
	Totals	39	123	162

Figure 1: Sow Herd PCV2 PCR by sample type



Superscripts indicate significant difference (P < 0.0001)

CONCLUSION

These diagnostic comparisons indicate that PUCS, colostrum and swabs could be utilized to determine PCV2 stability at a herd level. Based on the production health survey, the fewer positive samples than expected in farms A – F is likely due to the management (herd closure) and vaccination of incoming gilts. The results indicate PUCS is more sensitive than colostrum and swabs in high prevalence but not in low prevalence sow herds. There are negligible differences between PUCS and swabs in regards to cost, time, skill level and biosecurity to collect each sample. In an unknown herd, PUCS is recommended over the other methods. PUCS protocols to determine sow herd stability have been implemented in over 40 herds.

REFERENCES

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