



## PARALLEL, RANDOMISED FIELD EFFICACY, AND RETURN-ON-INVESTMENT STUDY OF A NEXT-GENERATION PRRSV2-MLV VACCINE COMPARED TO A CONVENTIONAL LINEAGE 7 BASED PRRSV2-MLV VACCINE

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### Introduction and Objectives

Porcine reproductive and respiratory syndrome virus (PRRSV) is a major challenge in global swine production. A next-generation PRRSV modified live virus (MLV) vaccine, developed by Synthetic Attenuated Virus Engineering (Coleman et al., 2008). Via targeted attenuation by codon pair deoptimization, a significantly reduced speed of NSP1 translation is achieved. The subsequent reduced viral replication and immune deviation is indicated to provide very high efficacy, cross-protective capacity, and safety (Suh et al., 2026; Park et al., 2021). This study aimed to compare the effectiveness of the CPD-PRRSV2-MLV with a conventional PRRSV2-MLV in reducing production losses and improving economic outcomes on a commercial wean-to-finish farm under natural PRRSV infection.

### Materials and methods

The trial was conducted on a wean-to-finish farm with a history of PRRSV2 circulation during the fattening phase, confirmed by longitudinal serum PCR; attempts on sequencing of the field strain was unsuccessful. The farm routinely used a conventional PRRSV2-MLV as part of its disease control strategy. All piglets originated from a 2,000-sow PRRSV-negative breeding herd. A total of 1,258 piglets were assigned randomly into two groups housed in separate barns with similar management. The CPD-MLV group (n = 625) received a CPD-lineage 5 PRRSV2-MLV (Persoporc<sup>TM</sup>, Ceva, France) according to farm management traditions, at five weeks of age, while the Con-MLV group (n = 633) received a conventional lineage 7 PRRSV2-MLV. Growth performance, mortality, and economic data were collected throughout the cycle. Economic return was calculated using Gompertz standardization and current local prices.

### Results and Discussion

The CPD-MLV group showed better performance, with lower cumulative mortality (1.44% vs. 1.74%), higher average daily gain (709 vs. 676 g/day), and improved feed conversion ratio (2.73 vs. 2.76). Economic analysis revealed higher net profit per pig (51.28 € vs. 41.23 €), of 10.05€ in favor of the CPD-MLV group (Table 1).

Under the given endemic PRRSV2 management conditions, the CPD-MLV vaccine demonstrated to be a valid alternative to a traditional MLV vaccine, shown on health, production, and economic outcomes compared to the conventional vaccine.

### Conclusion

These findings support the value of the next-generation CPD-MLV vaccine in PRRSV2 control programs, offering benefits for herd health, animal welfare, and profitability.

### References

- Coleman JR *et al.*, 2008. Virus attenuation by Genome-Scale Changes in Codon Pair Bias. *Science* 320, 1784-1787.
- Park C *et al.*, 2021. Intradermal co-inoculation of codon pair de-optimization (CPD)-attenuated chimeric porcine reproductive and respiratory syndrome virus (PRRSV) with Toll like receptor (TLR) agonists enhanced the protective effects in pigs against heterologous challenge. *Vet. Microbiol.* 256, 109048.
- Suh J *et al.*, 2025. Reproductive efficacy of a modified-live porcine reproductive and respiratory syndrome vaccine against Korean PRRSV-2 challenge in sows. *Front. Vet. Sci.* 12:1747817.

Vaccine group	n	Mortality (%)	Wean-finish			
			ADG (g/d)	FCR (kg/kg)	Net profit/pig	$\Delta$ +profit/pig
<b>Persoporc CPD MLV</b>	625	1.44	709	2.73	51.28 €	10.05 €
<b>Traditional L7 MLV</b>	633	1.74	676	2.76	41.23 €	na

Table 1 Improvements and profits following piglet vaccinated with the next-generation PRRSV2 vaccine compared to a traditional PRRSV2 lineage 7 based MLV vaccine in a PRRSV2 endemic farm