PCR Analysis of PRRSV Disinfection Protocols Based on Environmental Factors

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The Porcine Reproductive and Respiratory Syndrome Virus (PRRSV) is a highly infectious and contagious pathogen with a significant impact on the global swine industry, causing reproductive and respiratory problems in pigs, and leading to substantial losses in food supply global swine production. The control of PRRSV spread requires effective biosecurity measures, including boot disinfection. This study investigates the effect of three key environmental factors: temperature, disinfectant concentration, and contact time on the efficacy of disinfectants in inactivating PRRSV on boot surfaces. The tests were conducted at varying temperatures (high, low, and room temperature), concentrations (high, recommended, and low), and exposure times (5 seconds, 1 minute, and 10 minutes). PCR results demonstrated that lower temperatures, longer contact times, and lower concentrations were more effective in reducing residual PRRSV genomic copies. Higher concentrations of the disinfectant were shown to be less effective than anticipated, suggesting that overuse may obstruct the disinfectant's efficacy. These results are contrary to common practices of using high concentrations and limited contact time and suggest that optimal disinfection occurs with lower concentrations, expanded contact times, and at cooler temperatures. The study shows the importance of proper disinfection in improving biosecurity to reduce PRRSV transmission, and ultimately decrease the virus's economic and health impacts on the swine industry.

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