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**The seasonal dynamics of *Salmonella* detection in German poultry farms: a post-cleaning-and-disinfection analysis**

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**Abstract:**

**Background/Objective:** *Salmonella* continues to be a significant foodborne pathogen, resulting in thousands of human illness cases annually throughout Europe and imposing a considerable economic burden on the entire poultry industry. Disease control steps like vaccinations, better biosecurity, and effective rodent management in breeding and laying hens have significantly lowered human *Salmonella* cases in Europe. However, the potential risk to public health is evident when *Salmonella* strains remain in poultry houses post-cleaning-and-disinfection, as *Salmonella* continues to be a leading cause of foodborne illness.

**Methods:** A total of 1,460 samples were collected from German layer (n = 10) and broiler (n = 21) farms during the service period. The samples were tested for the presence of *Salmonella* using real-time PCR, followed by the microbiological culturing of any PCR-positive samples. At the time of sampling, all farms had a history of testing positive for *Salmonella* during regular monitoring. Sampling was conducted throughout the year, covering each season: spring (n = 240), summer (n = 323), fall (n = 607), and winter (n = 290).

**Results:** A total of 27.2% (397 out of 1,460) of the collected samples tested positive by real-time PCR. The prevalence of *Salmonella* was not significantly different between the indoor and outdoor locations. However, significant differences were observed in the occurrence of *Salmonella* in the samples collected depending on the season. There were more *Salmonella*-positive samples in fall (37.4%) and summer (25.1%) compared to winter (14.8%) and spring (19.2%). A significant correlation was found between the season and positive *Salmonella* detection.

**Conclusion:** This study highlights the need for thorough implementation of cleaning and disinfection procedures to eradicate any remaining infection within poultry houses. It also suggests considering the seasonal impact on *Salmonella* persistence.

**Keywords:** *Salmonella*; Poultry; Germany; Season; Real-time PCR