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**Optimising liquid feeding system hygiene to improve the microbiological quality of liquid feed for grow-finisher pigs**

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**Application**

No standard guidelines exist for optimising liquid feeding system hygiene, and current practices vary considerably between farms. This study examines the possibility of providing pig farmers with a protocol for improving liquid feeding system hygiene.

**Introduction**

Uncontrolled fermentation in liquid feed leads to the proliferation of undesirable microbes, with a subsequent loss of energy and amino acids from the diet (O’Meara et al., 2020). Our objectives were to perform an intensive physical and chemical cleaning protocol on the feeding system to disrupt microbial biofilms, suppress Enterobacteriaceae and fungal growth, and maintain system hygiene.

**Materials and methods**

Baseline samples were collected before the start of the trial. An intensive physical and alkaline detergent cleaning, followed by an acid wash, was performed on the feeding system. Thereafter, an acid rinse of the system was conducted nightly during the 76-day feeding study.

This rinse residue was used to prepare the first feed of each day. On day (d)1 post-cleaning, 180 pigs (35.0 kg ± 4.90 SD) were sorted by weight into pen groups of 5 pigs each (36 pens in total) and liquid-fed from the system. At each of 13 sampling occasions during the study, swabs from the mixing tank and inside the feed pipe were collected, along with feed samples from the mixing tank and troughs, for microbiological and physicochemical analysis. Scanning electron microscopy (SEM) was also performed on internal pipe surfaces.

**Results**

Enterobacteriaceae, yeasts and moulds were undetectable during the d1-week (wk)1 post-cleaning period on the mixing tank and pipe surfaces, compared to baseline. However, yeasts and moulds were still detected in the pipes at d1 post-cleaning, but were undetectable by d3.

This finding was confirmed by SEM images showing damaged fungal hyphae in the pipes on d1 post-cleaning, which were absent thereafter.

Yeasts and moulds remained undetectable on the mixing tank surface up to wk4 post-cleaning, while Enterobacteriaceae and moulds were undetectable in the pipes until wk10 post-cleaning. By wk5 post-cleaning, Enterobacteriaceae, lactic acid bacteria and yeasts had returned to baseline levels on the mixing tank surface. Microbial counts and pH of the feed were not impacted by the cleaning protocol.

**Conclusions**

An intensive cleaning protocol improved liquid feeding system hygiene, while feed microbiology was not impacted. Direct acidification of feed or microbial inoculants may be required to improve the microbial quality of liquid feed.

**Acknowledgments**

This study was funded by Teagasc and the Irish Research Council. We thank the farm staff and students in the Teagasc Pig Development Department, Interchem, Annona, Irish Dairy Services and Big Dutchman for assistance.

**References**

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doi: 10.1016/j.anscip.2023.01.480