

Impact of Combining a Low Protein Diet and Oil Sprinkling on Odour and Dust Emissions of Swine Barns

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Summary

Odours from intensive swine operations are a significant limiting factor in the expansion of the pork industry, and dust in pig housing is suspected to be the cause of work-related respiratory symptoms in pig farmers. The impact of canola oil sprinkling and a low protein diet on dust and odour emissions of grower-finisher rooms was examined. Sprinkling oil reduced total dust emissions by 76% but the effect of oil sprinkling and low protein diets did not have a clear impact on odour emissions. Based on this study, reducing the indoor dust levels does not decrease building odour emissions.

Introduction

A dust control strategy shown to be promising in reducing dust in pig housing is oil sprinkling. Oil sprinkling has also been shown to reduce gas emissions, possibly affecting the odours emitted from the barn. The objective of this study was to investigate the effect of a low protein diet with fermentable carbohydrates (FC) and oil sprinkling on dust and odour emissions of grower-finisher rooms, and to determine the relationship between the two parameters.

Experimental Procedures

Four commercial rooms at PSC were used to measure the impact of the different treatment combinations on dust and odour emissions over three different grower-finisher cycles. Two raw canola oil application rates (0 and 10 mL/m² per day) and two feed formulations (normal protein diet and low protein diet with FC) were used. During the experiment, the dust and odour concentrations were monitored in the four rooms.

Results and Discussion

Figure 1 shows the dust emission from the rooms over the experimental cycle. The oil application significantly reduced total dust emissions by 76% ($p < 0.05$) and pig performance was not affected by the treatments ($p > 0.05$). The experimental diet did

not significantly affect dust emissions ($p > 0.05$). Figure 2 presents the results from the odour evaluations. Due to high variability of the results for odours, neither the oil sprinkling nor the experimental diet affected odour emissions or the hedonic tone ($p > 0.05$). In this experiment, there was no relationship between dust and odour emissions.

Implications

Sprinkling of canola oil was effective at reducing the dust emissions in grower/finisher rooms, but the low protein diet with FC did

not reduce dust emissions. The results from the odour measurements were so variable that future research will be done to ensure the odour is characterized in a more effective manner.

Acknowledgements

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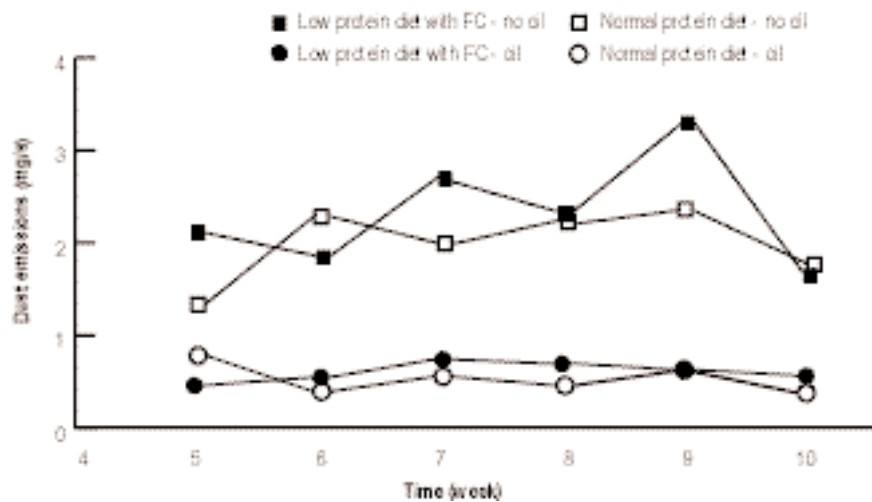


Figure 1: Evolution of total dust emissions for the different treatment combinations.

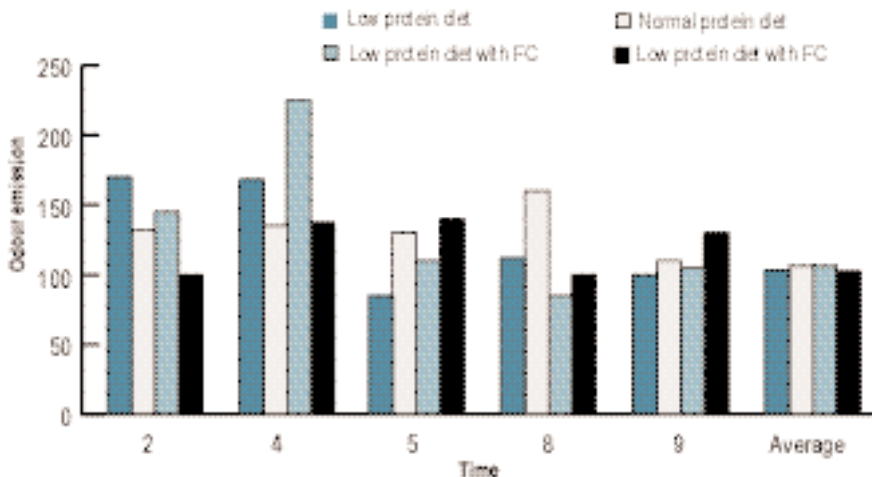


Figure 2: Odour emissions for the different treatment combinations.

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