A Low Protein Diet and Oil Sprinkling to Reduce Ammonia Emissions From Pig Barns

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Summary

Ammonia concentrations in swine barns have an adverse impact on the health and safety of workers and animals. Ammonia also has the potential to cause eutrophication and acidification of water and soil. The impact of raw canola oil sprinkling and a low protein diet with fermentable carbohydrates (FC) on ammonia emissions of grower-finisher rooms was investigated. Ammonia emissions were reduced by 42% with the low protein diet with FC, and oil sprinkling did not affect the ammonia levels. Reducing the protein level and including FC in pig diets is an effective way to decrease ammonia emissions of swine buildings.

Low protein diets reduce ammonia emisions, but oil sprinkling has no effect on these emissions.

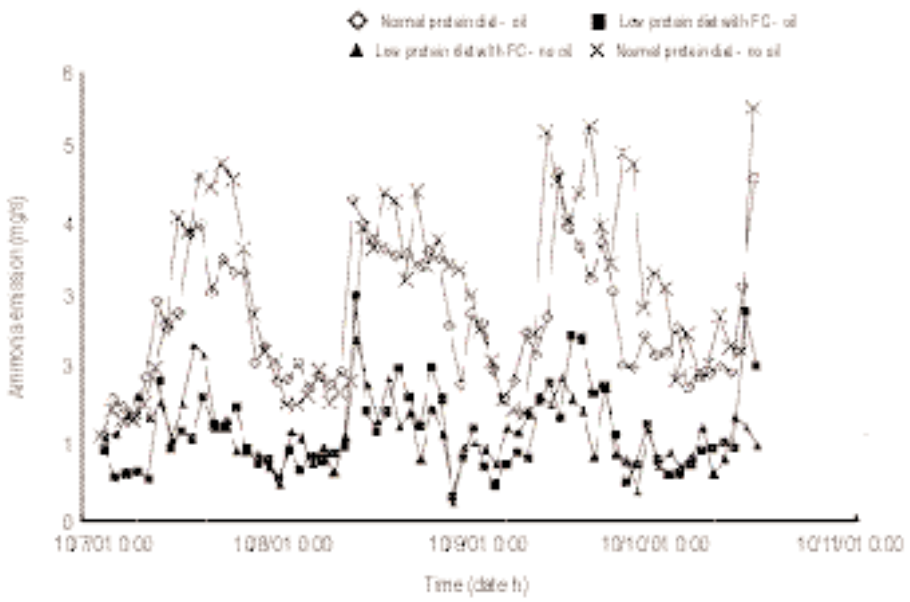

Figure 1: *Ammonia emissions from each room between October 7 and October 10, 2001.*

Introduction

Previous research has shown that reducing dietary protein and inclusion of FC both result in reduction of ammonia emissions. Oil sprinkling in swine barns has also been shown to have varied results on the impact on ammonia emissions. The objective was to perform a full-scale study to investigate the results on ammonia emissions when both a low protein diet with FC and oil sprinkling are used.

Experimental Procedures

Four commercial rooms at PSC were used to measure the impact of the different treatment combinations on ammonia emissions over three grower-finisher cycles. Two raw canola oil application rates (0 and 10 ml/m^2 per day) and two feed formulations (normal protein diet and low protein diet with FC) were investigated. The ammonia emissions and pig performance were monitored.

Results and Discussion

Figure 1 presents typical results of the ammonia emissions from the four rooms. Ammonia emissions were reduced by 42% over the three cycles ($p<0.05$) using the low protein diet with FC. The oil application did not have any impact on ammonia emissions ($p>0.05$), and pig performance was not affected by the treatments ($p>0.05$).

Implications

Sprinkling canola oil in the room does not significantly impact ammonia emissions from swine buildings, but ammonia emissions do decrease when both the protein level is reduced and FC is included in pig diets.

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