Reduction of Odour and Gas Emissions from Swine Buildings Using Canola Oil Sprinkling and Diet Manipulations

S. Godbout¹, S.P. Lemay², R. Joncas¹, J.P. Larouche¹, A. Marquis³, J.F. Bernier³, R.T. Zijlstra²,
E.M. Barber⁴ and D. Massé⁵
¹IRDA, Deschambault, QC; ²Prairie Swine Centre Inc., Saskatoon, SK; ³Université Laval, Québec, QC;
⁴University of Saskatchewan, Saskatoon, SK; ⁵Agriculture and Agri-Food Canada, Lennoxville, QC.

The Message
Odour and gas emissions from swine operations present major constraints to expansion and acceptance of the swine industry. An interdisciplinary approach was taken to reduce total emissions through oil sprinkling and dietary manipulations. Phase I of testing in a laboratory type set up was realized successfully and showed that:

• Dust levels were significantly reduced by 88, 93 and 96% with oil sprinkling rates of 10, 20 and 30 ml/m²-day, respectively, but the dietary manipulations had no impact on dust.
• Ammonia emissions were significantly reduced with the use of low protein diets by 21 and 38% for the low protein and the low protein with fermentable carbohydrates diets, respectively. However, oil sprinkling had no effect on ammonia emissions.
• Average feed intake and gain were not affected by the treatments.

The analysis of odour emission data still have to be completed. Phase II realised in a commercial set up will start in January 2001 at PSCI.

Material and methods

Phase I:
The following combinations have been tested and repeated 4 times over 3 weeks in bench scale grow-finish chambers housing 4 castrated males of an average starting weight of 58 kg:

• 4 oil application rates (0, 10, 20 and 30 ml/m²-day) and 3 diets (control (C): 18% protein; low protein (LP): 16% protein; LP and fermentable carbohydrates (LP-FC): 16% protein with soybean hulls).

Conclusions
• Pig performances were not affected by treatment combinations.
• Oil sprinkling reduced dust levels by 88, 93 and 96% with application rates of 10, 20 and 30 ml/m²-day, respectively, but the dietary manipulations had no impact on dust.
• Diet manipulation reduced ammonia emissions by 21 and 38% for LP and LP-FC diets, respectively. However, the oil sprinkling had no significant effect on the ammonia emissions.

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