

# A Low Protein Diet Combined with Oil Sprinkling for Reducing Odour and Gas Emissions of Pig Barns

M. Payeur<sup>1,2</sup>, S.P. Lemay<sup>1</sup>, R. Zijlstra<sup>1</sup>, S. Godbout<sup>3</sup>,  
L. Chénard<sup>1</sup>, R. Joncas<sup>3</sup>, J.F. Bernier<sup>4</sup>, E.M. Barber<sup>6</sup> and  
A. Marquis<sup>5</sup>

<sup>1</sup>Prairie Swine Centre Inc., Box 21057, 2105-8<sup>th</sup> Street East, Saskatoon, SK S7H 5N9; <sup>2</sup>Dept Agricultural & Bioresource Engineering, Univ Saskatchewan, Saskatoon, SK S7N 5A9; <sup>3</sup>Institut de recherche et de développement en agroenvironnement (IRDA), Centre de recherche, 120-A, Chemin du Roy, Deschambault, QC G0A 1S0; <sup>4</sup>Dépt sciences animales, <sup>5</sup>Dépt sols et de génie agroalimentaire, Faculté des sciences de l'agriculture et de l'alimentation, Université Laval, Québec, QC G1K 7P4; <sup>6</sup>College of Agriculture, Univ Sask.; **Email:** lemay@sask.usask.ca

Odours and gases produced from the ventilation system of a hog barn, as well as emissions from manure storage and land application, can be a nuisance for the environment and the neighbourhood. This study constituted the second phase of a larger project and was conducted to determine the combined impact of canola oil sprinkling with a low protein diet on odour and gas emissions of grower-finisher rooms. Four commercial rooms at PSCI were used to measure the effects of two oil application rates and two feed formulations over three different growing-finishing cycles of 10 weeks each. The ventilation rate, temperature, relative humidity, ammonia, carbon dioxide, odour and dust concentrations were monitored in each of the four rooms.

The trends obtained in the first phase of the project were observed in the second phase as well. Preliminary analysis of the data shows that a low protein diet including fermentable carbohydrates can reduce the ammonia concentration at the exhaust fan by up to 50%. The canola oil application reduced total dust concentration by 50 to 80%. However, there is no consistent effect of the oil application on the ammonia concentration. Although the ammonia concentration is largely reduced by the low protein diet, the experimental diet and the oil application do not have a consistent impact on odour emissions.