

Odour and Greenhouse Gas Emissions Resulting from Surface and Subsurface Land Application of Solid and Liquid Manure

J. Agnew, C. Laguë, J. Schoenau

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Odour emissions from the livestock industry continue to pose a nuisance for many rural communities in Canada. In particular, manure spreading operations constitute a major source of emissions and very few technologies exist to reduce odour emissions resulting from the land application of manure. Subsurface application of liquid manure is a commonly accepted practice to reduce odour emissions although there is very little data to support this. Furthermore, there have been very few studies examining odour emissions from solid manure application. Subsurface application also has the potential to negatively influence greenhouse gas emissions from the soil, which is an important factor to consider when evaluating the overall carbon footprint of the livestock industry.

The objective of this study was to complete a plot-scale comparative assessment of odour and greenhouse gas emissions resulting from liquid and solid manure applications using both surface and subsurface application methods. The results indicate that odour and greenhouse gas emissions from liquid manure application were higher than those arising from solid manure application. While sub-surface application resulted in reduced odour emissions, it increased greenhouse gas emissions for both types of manure.