

Noise

Noise resulting from agricultural practices is not creating as much annoyance as other activities such as aircraft, domestic and road traffic noise (Lines and al., 1994). However, as the size of swine production units increases more traffic is associated with the operation, including more feed inputs in the form of already mixed diets or grains, and more outputs removed from the farm (more pigs going to market, and more manure being brought to the fields for land application). As mentioned by Lines et al. (1994), noises associated with this traffic can become a nuisance for the neighbours at certain times (for the swine production, it could be at the end of the finishing period, the manure application period). Avoiding or limiting the evening and night traffic is a way to lower this nuisance.

Also as the herd size increases, more noises coming from the buildings are generated by animals, the ventilation and the feeding systems. Different types of ventilation systems such as exhaust fans mounted on chimneys or the use of natural ventilation can reduce the noise level generated by the ventilation system. However, establishing proper siting to lower odour impacts, would also benefit abatement of noise from the buildings or from activities related to manure management (mixing and pumping at the manure storage facility).

As presented by Peng and Lines (1995) many factors that are interrelated affect noise propagation, including distance, air absorption, meteorological conditions, and ground cover. Of those factors, ground cover can be controlled by farmers. Methods or models that would help us understand noise would be valuable tools to better understand noise propagation and the impact of different factors. For example, ground surface coverage, roughness, and barrier insertion all affect air turbulence and noise movement over agricultural land. More work is needed in order to understand the effect of those parameters.

■ What Else Needs to Be Done

As trees and vegetation can be helpful to control odour dispersion, research to find the best arrangements (location versus the odour and noise sources, type of vegetation) that would lower the impact of noise and odour in rural areas is needed.

Abstract or Summary of Interesting Publications

Lines, J.A., S.R. Lee and M.A. Stiles. 1994. Noise in the countryside. *Journal of-Agricultural-Engineering-Research*. 1994, 57:4, pp. 251-261.

Environmental noise is a subject of growing public concern. Two surveys are reported which explore the attitudes of the British public to noise in the countryside and in particular to environmental noise caused by agricultural activities and other uses of farm land. The results indicate that agricultural noise has been the cause of annoyance to 6% of the rural and semi-rural population in the last 2 yr. Aircraft, domestic and road traffic noise each cause 4 times more incidents of annoyance than agriculture. The most frequent sources of agricultural noise

annoyance are acoustic bird scarers and field or transport operations. When compared with the comparable issue of unpleasant smells in the countryside, noise was judged by a small majority of the survey respondents to be less important. Complaints about farm noise comprise about 3% of the noise complaints received by rural local authorities. These complaints most frequently refer to noise from acoustic bird scarers, clay pigeon shooting and rough terrain motor sports.

Peng, C. and J.A. Lines. 1995. Noise Propagation in the Agricultural Environment. *Journal of Agricultural Engineering Research*, 60: 155-165.

The theory and practice of outdoor sound propagation modeling are reviewed. The contributions of geometric divergence, atmospheric absorption, barriers, the ground effect and meteorological conditions are described. Theoretical models and empirical schemes for predicting noise propagation are considered. The importance of the ground effect indicates the potential for reducing environmental noise from agricultural activities through farmland management. Current limitations on the ability to predict noise propagated over farm land are due to a lack of knowledge about the characteristics of typical field surfaces, difficulty in modeling some typical meteorological conditions and the long computation times required.