

Odour Control by a Negative Air Pressure Geotextile Manure Storage Cover

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The feasibility of a negative air pressure geotextile earthen manure storage cover to control odour from a pork production site was evaluated. Odour levels from two 3,200 farrow-to-wean production sites were compared. Site 1 had a 740x160x16 ft. covered earthen manure storage; Site 2 had an uncovered, L-shaped storage of similar volume. On 4 days, between 1 and 4 PM, odour samples were collected from 9 locations at each site (equal distance around the perimeter of the storage; 200 and 300 m downwind from the site; 200 m upwind from the site; directly from the exhaust fans of the gestation and farrowing sections of the barns). The odour samples were analyzed by olfactometry. Wind speed and direction, air temperature and humidity were recorded during each sampling period. The results of this preliminary study suggest the following: 1) Mean odour levels from each site were very low and there was no difference in overall odour levels between Site 1 and 2 (51 and 53 odour units (OU), respectively). In comparison, lagoons during agitation have yielded odour levels of 500 to 1000 OU. 2) Odour levels at the perimeter of the storages were 37 OU at Site 1; 38 OU at Site 2. 3) 300 metres downwind the odour level at were 29 OU and 30 OU at Site 1 and 2 respectively. These odour samples were confounded with barn odour. 4) A survey of neighbours indicated a reduction in odour although this difference was not detected with olfactometry. 5) A high level of management is required to maintain and handle the cover on a single-cell manure storage of this size.

Implications: Further research is required to determine the economic and management implications of covering earthen manure storages under variable conditions (wind, temperature, humidity); to quantify sources and frequency of odour from production sites; & to evaluate the field application of olfactometry.

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