

# Evaluation the effect of biofilter media on reducing ammonia and odor emissions from a pig house<sup>(1)</sup>

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## Abstract

The purpose of this study was to evaluate the effect of different biofilter media on reducing ammonia and odor emissions from a pig house, for meeting the environmental regulations promoting air quality in the pig farm. Air beneath the slotted floor in the closed pig house was conducted into four pilot-scale biofilter columns filled with fern chips (F), fern chip mix with compost (FC), coir (C) and coir mix with compost (CC), respectively. The empty bed retention time (EBRT) was set at 60 second, and the ammonia and odor concentrations in the inlet and outlet gases of each column were measured. Results showed that the averages of the inlet concentrations of ammonia and odor were 7.3 ppmv and 175, respectively. Average concentrations of ammonia and odor after treating by F, FC, C and CC biofilters were 0.2, 0.5, 0.3, 1.8 ppmv and 22.2, 16.9, 18.6, 24.1, respectively. Ammonia and odor removal efficiencies of these biofilters were significant. CC biofilter had a significantly lower ammonia removal rate (75%) than others ( $> 92\%$ ,  $P < 0.01$ ). The odor removal rates by F, FC, C and CC biofilters were 87.3, 90.3, 89.3 and 86.2%, respectively and there was no significant difference among biofilters. The results show that F, FC and CC biofilters can reduce ammonia and odor emissions beneath the slotted floor in the pig house. However, a full-scale biofilter study still needed to evaluate the feasibility of this technology.

Key words: Biofilter, Pig house, Ammonia, Odor.

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