

IMPACT: AIR POLLUTANTS EMISSIONS

Reference 9

Liu Z., Ariful Haque Md., 2020 Evaluate the representativeness of the NAEMS air emission data for swine operations in a changing industry AMERICAN SOCIETY OF AGRICULTURAL AND BIOLOGICAL ENGINEERS 10.13031/aim.202001437

Background and objective

Air emissions from animal feeding operations (AFOs) are receiving increasing attention because of concerns related to human and animal health, nuisance and impacts on climate change The goal of the project is to gather solid information for an evaluation of the representativeness of air emissions monitoring data collected from swine operations under NAEMS relative to emissions from the predominant swine production systems in use today and in the next few years, and to provide scientific evidences for an estimation of the nature and size of the changes in emissions today. here the focus is on the effect of reducing crude protein in diet and feed additives on ammonia emissions.

Search strategy and selection criteria

Extensive literature search using various databases, including, google scholar, science direct, SciHub, web of science were carried out. Special focus was pointed to North America. Meta-analysis was conducted for NH₃ and H₂S from both swine barns and lagoon/basins, and VOCs and PM from swine barns, as what have been measured in NAEMS. Not reported

Data and analysis

Not reported

Number of papers	Population	Intervention	Comparator	Outcome	Quality score
not reported	Swine	1) Low crude protein diet; 2) feed additives	1) no reduction in dietary CP; 2) no feed additives	Metric: Ammonia (NH ₃) emissions; Effect size: not applicable	25

Results

- Reducing dietary crude protein (CP) content can result in reduced excretion of excess nutrients such as nitrogen and thus can reduce NH₃.
- Addition of various additives such as minerals, enzymes, antibiotics and other materials (e.g. beta-agonists, direct feed microbial, metabolites) improve the nutrient utilization efficiency and reduce the dietary nutrient content without compromising the animal performance.
- NULL
- NULL
- NULL

Factors influencing effect sizes

- No factors influencing effect sizes to report

Conclusion

The effects reported for low crude protein diet and feed additives are generally positive, but the uncertainty is high due to the limits of the methodology implemented.