

Development of an objective approach to odor characterization while assessing diet as a tool to manage odor emission

Principal Investigators

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Objectives

1. Compare objective means of odor assessment to each other and to more traditional subjective evaluation procedures
2. Identify characteristics of malodor that will lay the groundwork for the development of portable odor assessment devices
3. Evaluate dietary strategies for effectiveness in reducing odorous emissions

Project Summary

Feeding strategies have focused on altering manure pH and the inclusion of fiber in swine diets. Research was continued to determine the effects of balancing the available amino acid levels in the diet on odor emissions from stored manure and additional fiber sources and levels, such as wheat bran, in pig diets on odor emissions. Work was also continued with soybean hulls and sugar beet pulp. As an integral part of the project we have assessed instrumental methods as alternatives to olfactometry and will continue to do so. Air sample analyses via gas chromatography were expanded in this second year of the project to quantify over 30 compounds compared with 16 compounds quantified in Year 1. In addition, electronic nose evaluation was conducted in Year 2 using the AromaScan electronic nose, used in Year 1, as well as a CyraNose 320 unit in order to compare sensitivity of the two instruments as collaborative efforts continue. The final product of the collaborative studies will be a recommendation of feeding strategies to improve air quality in swine facilities and identification of olfactometry alternatives.