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1-888-533-4446

SHAC *Feed Additive* and Swine Productivity

AMMONIA REDUCES PRODUCTIVITY

The environment within swine housing facilities is one of the most significant limiting factors in swine productivity and health. Ammonia is the gas that most often approaches or exceeds threshold limit values for pigs and humans within such facilities.

Even relatively low levels of ammonia can reduce performance and increase the incidence of disease including pneumonia, pleurisy, arthritis, lesions of porcine stress syndrome, and abscesses. Respiratory diseases have been found to increase days to market by as much as 20 days. Even mild pneumonia has been reported to increase production costs and cause reductions in weight gains by as much as 10%.

Industry research studies have documented decreases in various production and animal health factors in correlation with chronic exposure to ammonia levels as low as 10 ppm.

Chronic exposure to ammonia at lower levels is a critical factor in lowered productivity. The following production losses were observed in various industry studies:

- 12 to 30% reduction in average daily gain was observed during a study conducted on pigs housed within chambers containing ammonia concentrations of 50-150 ppm as compared to pigs exposed to 0 ppm.
- 26% reduction in average daily gain and 47% reduction in feed efficiency were observed during a study conducted on gilts housed within chambers containing ammonia concentrations of 50 ppm as compared to gilts exposed to concentrations of 0 ppm. 5% reduction in average daily gain and 9% reduction in feed efficiency were observed in the same study after exposure to ammonia concentrations of only 10 ppm.
- Significant delay in the onset of puberty was observed during a study conducted on gilts housed within a chamber containing an ammonia concentration of 20 ppm as compared to gilts exposed to an ammonia concentration of 5 ppm.
- In a study conducted in swine finishing buildings, medication costs for animals exposed to ammonia concentrations of 16-30 ppm were found to be 40-64% higher than animals exposed to concentrations of 7.4 ppm.

AMMONIA FACTS:

FACT: The typical range of ammonia (NH_3) in hog barns is between 5 and 250 ppm, with levels often in excess of the 25 ppm recommended threshold level.

FACT: Ammonia has been known to cause loss of appetite, which results in slower gains.

FACT: The concentration of ammonia can be as much as 60% higher at the pig breathing zone than at the human breathing zone.

FACT: Dust and other airborne particles may carry NH_3 in a concentrated form deeper into the lungs where it can cause extensive damage to the respiratory system.

FACT: Ammonia has been found to be correlated with increased susceptibility to infectious disease in swine.

SHAC PRODUCTS REDUCE AMMONIA AND ODORS

FACT: Up to 63% reduction in ammonia.

FACT: 57.6% reduction in overall odors.

FACT: 28% reduction in carbon dioxide.

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BENEFITS OF SHAC *FEED ADDITIVE*

SHAC *Feed Additive* has been researched and proven to significantly reduce NH_3 and odor levels in confined hog operations. A combination of industry research studies indicate many possible benefits of reducing ammonia.

- Improved average daily gain.
- Improved feed efficiency.
- Reduced incidence of disease.
- Reduced medication costs.
- Significant reduction in harmful gases and odors.

HOW SHAC *FEED ADDITIVE* WORKS

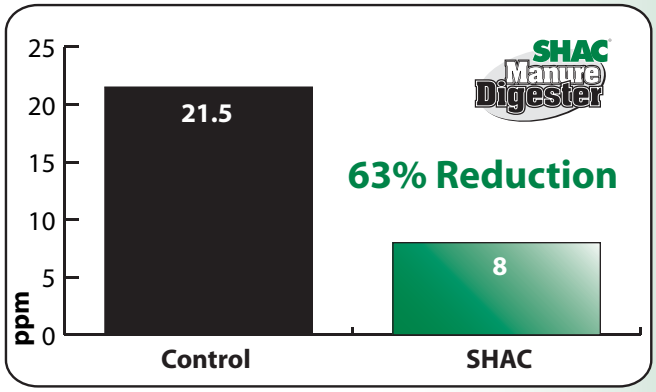
SHAC *Feed Additive* acts to significantly reduce ammonia and other harmful gases produced in confined hog operations. Because the product is added directly to the feed, the benefits begin at the animal rather than just in the pit.

SHAC *Feed Additive* products are manufactured from natural ingredients and have been approved by the Canadian Food Inspection Agency (liquid product Reg #982105 and granular product Reg #480549) as effective odor and ammonia reducing manure management products.

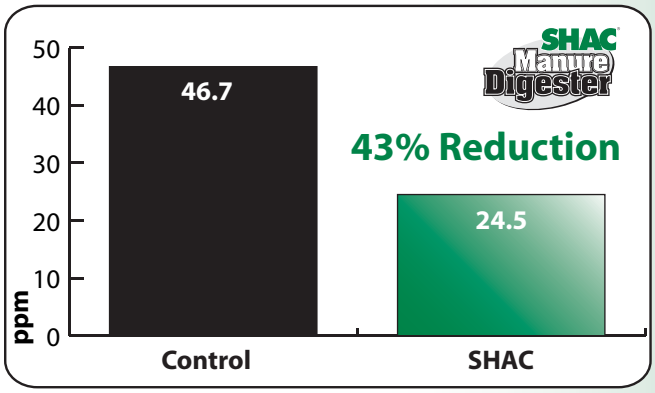
SHAC RESEARCH RESULTS

SHAC *Feed Additive* is research-based, industry-proven, and CFIA approved. It significantly reduces concentrations of ammonia, harmful gases, and overall odors. Researchers in the SHAC Technical Division, along with the institutions listed below, have conducted extensive research and field trials on SHAC products.

In an **Iowa State University** study, a low of 8 ppm NH_3 was achieved with *SHAC Manure Digester* treated pits compared to 21.5 ppm in the control pits. This represents a dramatic 63% reduction in measured ammonia levels within the treated swine barns.



During an evaluation of commercial manure additives conducted by **Agricultural Utilization Research Institute (AURI)**, in Iowa, pre-treatment levels of 46.7 ppm NH_3 were reduced to 24.5 ppm by applying SHAC *Manure Digester.* This represents a significant 43% reduction in ammonia levels in the barn.



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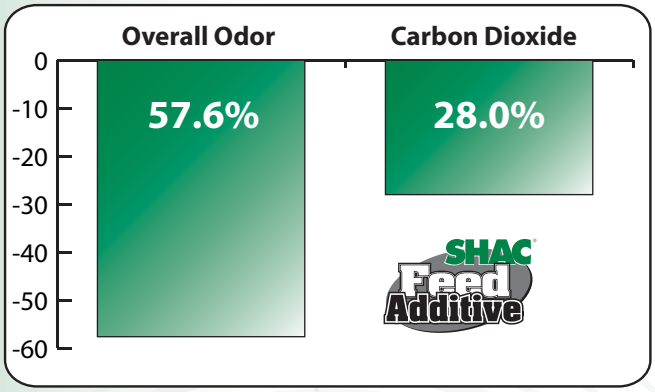
Efficacy trials using SHAC Feed Additive were conducted by the **Department of Animal and Poultry Science, University of Guelph**, in conjunction with Canadian Ortech Environmental Ltd. The trials included 580 pigs in two separate growing-finishing barns. The results indicated a 57.6% reduction in overall odors and a 28% reduction in carbon dioxide.

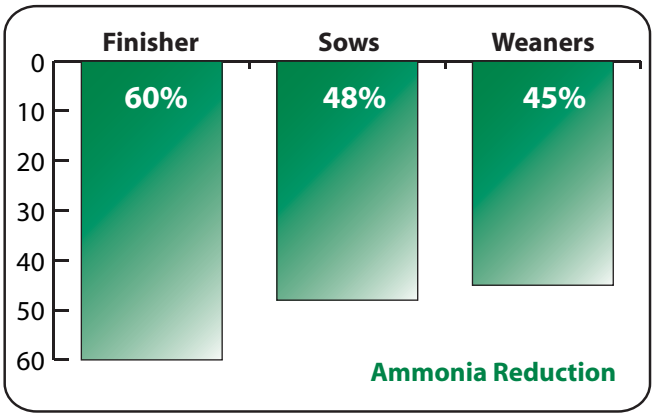


SHAC Feed Additive

SHAC FIELD RESULTS

SHAC *Feed Additive* and SHAC *Manure Digester* have been widely used throughout Canada and the USA. Extensive field work has been conducted to monitor the results of these products.

Fifteen independent barns totaling over 12,000 hogs took part in an extended study using SHAC *Feed Additive* at different stages of the production cycle. Significant reductions in ammonia were achieved in all groups.



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REDUCE AMMONIA - IMPROVE ENVIRONMENT

SHAC *Feed Additive* is an extremely cost effective air quality and manure management tool.

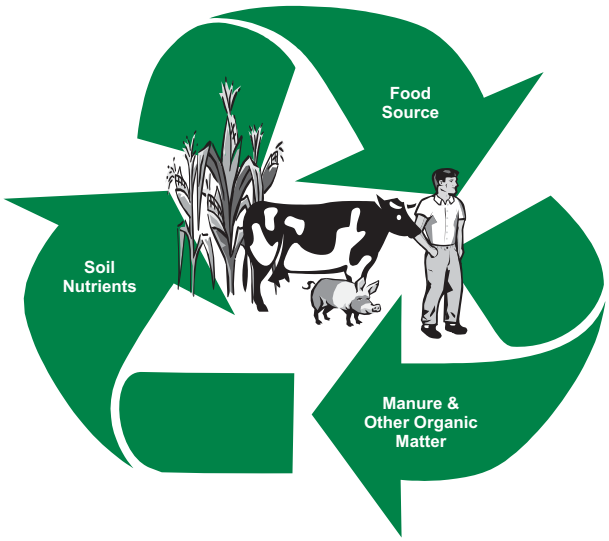
- **Significant ammonia and odor reduction.**
- **Improved health and working conditions.**
- **Improved environment.**

Ask your dealer or distributor to help you determine gains and benefits for your specific operation.

For the authorized distributor or dealer nearest you, contact SHAC Environmental Products at

1-888-533-4446

or visit us at **www.shac.ca**



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Additional information regarding the research and/or case studies summarized in this document may be requested from SHAC Head Office.

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