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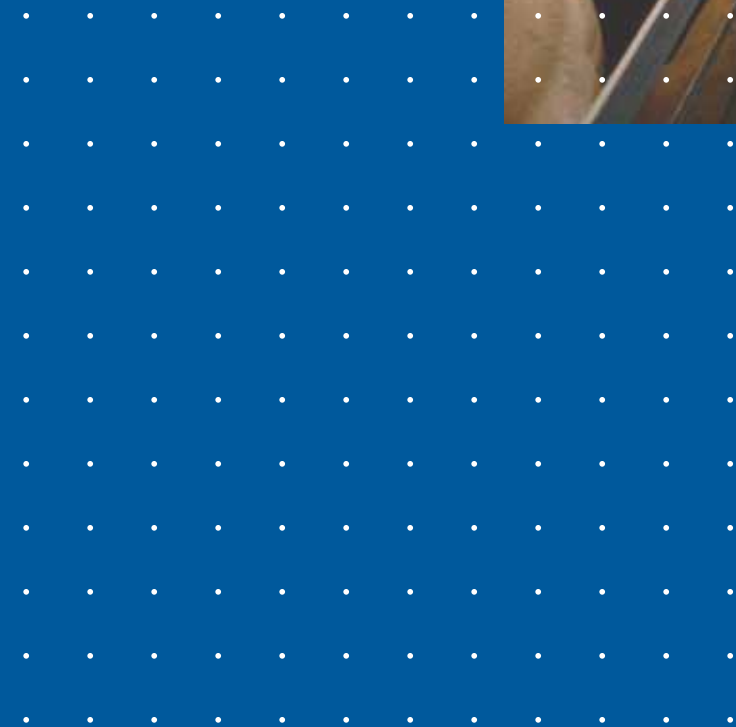
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Visit our website at: www.nutraaccess.com

MicroSource[®] S

A Proactive Management Tool

a **DSM** Product



DSM Nutritional Products

Unlimited. **DSM**



A REVOLUTIONARY SWINE MANAGEMENT TOOL

MicroSource S is a heat-stable microbial feed additive that contains microorganisms selected for their ability to improve the decomposition of stored swine manure. **MicroSource S** reduces the solids in manure and minimizes objectionable odors.

HOW IT WORKS

MicroSource S can be added to all types of swine feeds at the rate of 6.67×10^{10} cfu per ton of feed regardless of manure handling system. **MicroSource S** is stable in both meal and pelleted feeds and begins to work by providing a source of live microorganisms in the gastrointestinal tract. These microorganisms are distributed in every fraction of manure produced. This allows the decomposition to start as early as possible, and continues as the manure lands on the floor and is collected into the manure handling and storage area. **MicroSource S** controls the decomposition process which results in a reduction of solids and objectionable odors.

 **MicroSource[®] S**

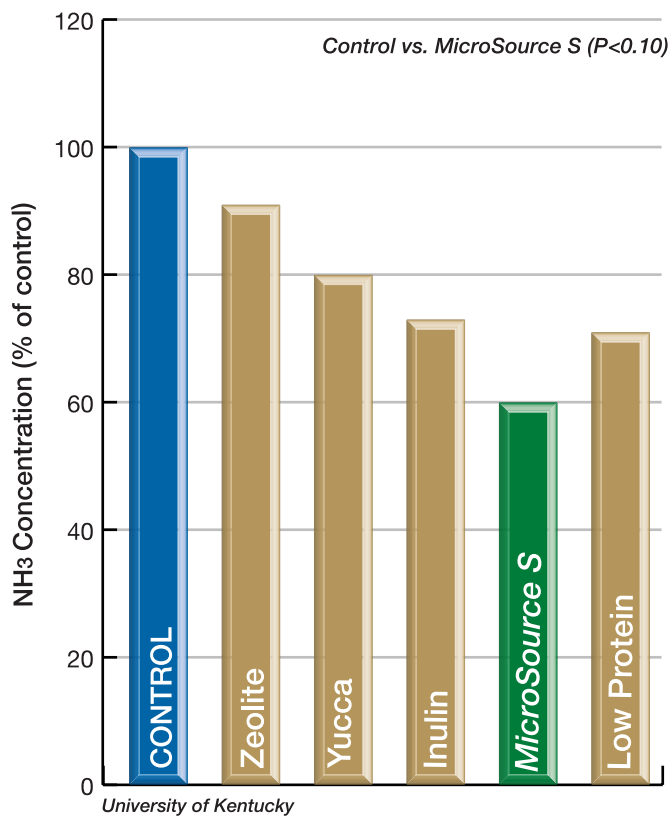


REDUCED ODOR LEVELS

Volatile fatty acids (VFA's), volatile sulfides (including hydrogen sulfide) and ammonia (NH₃) are the primary sources of objectionable odors in swine manure. These odors are the end products of normal microbial decomposition. Microorganisms in MicroSource S shift the decomposition process to reduce the production of these compounds. Water and carbon dioxide are the end products.

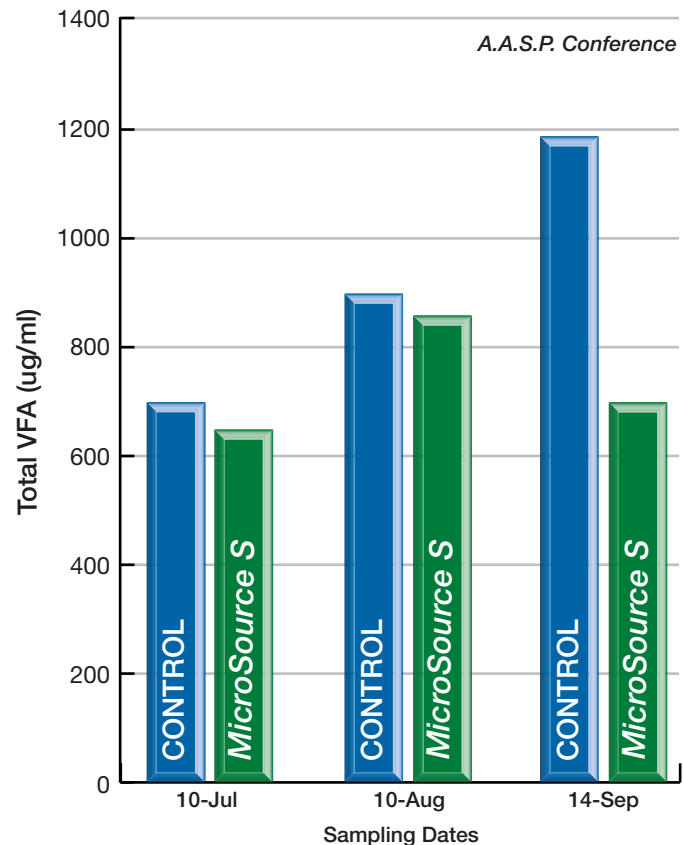
Researchers at the University of Kentucky demonstrated that MicroSource S outperformed several other feed additives by reducing ammonia emissions by almost 40% (Figure 1). This helps conserve nitrogen in the manure. In addition, in controlled field experiments, MicroSource S reduced manure VFA's by 43% (Figure 2) with a 50% reduction in ammonia levels (not shown) within the first 60 days.

Figure 1.
EFFECT ON AMMONIA

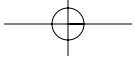


Effect of dietary additives on ammonia produced from anaerobically stored manure.

Figure 2.
EFFECT ON TOTAL VOLATILE FATTY ACIDS

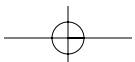
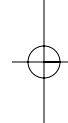
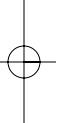


Effect of MicroSource S on odor compounds produced from anaerobically stored manure.



EASIER CLEAN-UP

Research at the University of Arkansas found that manure dissolved 28% faster when MicroSource S was included in swine diets. This indicates greater solids solubility. Furthermore, the microbes in MicroSource S produce enzymes that breakdown the undigested feedstuffs in the manure. This results in a less adhesive manure which means easier clean-up as well as reduced labor and water costs.





COST-EFFECTIVE SWINE FARM MANAGEMENT TOOL

The cost of using MicroSource S is as little as pennies per head per day. This cost is easily offset by the savings in clean-up and manure handling costs. Preliminary results from ongoing research also shows that MicroSource S improves average daily gain and feed-to-gain. When you add it all up, MicroSource S provides an immediate positive impact to your operation's bottom-line.

HOW MICROSOURCE S WORKS TO IMPROVE YOUR OVERALL OPERATION

EASY TO USE

- Added to the feed
- Inoculates every gram of manure produced

DECOMPOSITION PROCESS BEGINS IMMEDIATELY

- Reduces pressure washing time
- Saves on labor costs
- Saves on water costs
- Saves on manure hauling expenses
- Improves biosecurity

ENVIRONMENTAL BENEFITS

- Decreases ammonia, hydrogen sulfide and objectionable odor compound levels
- Promotes a better growth environment
- Improves the work environment
- Promotes good neighbor policy (GNP)

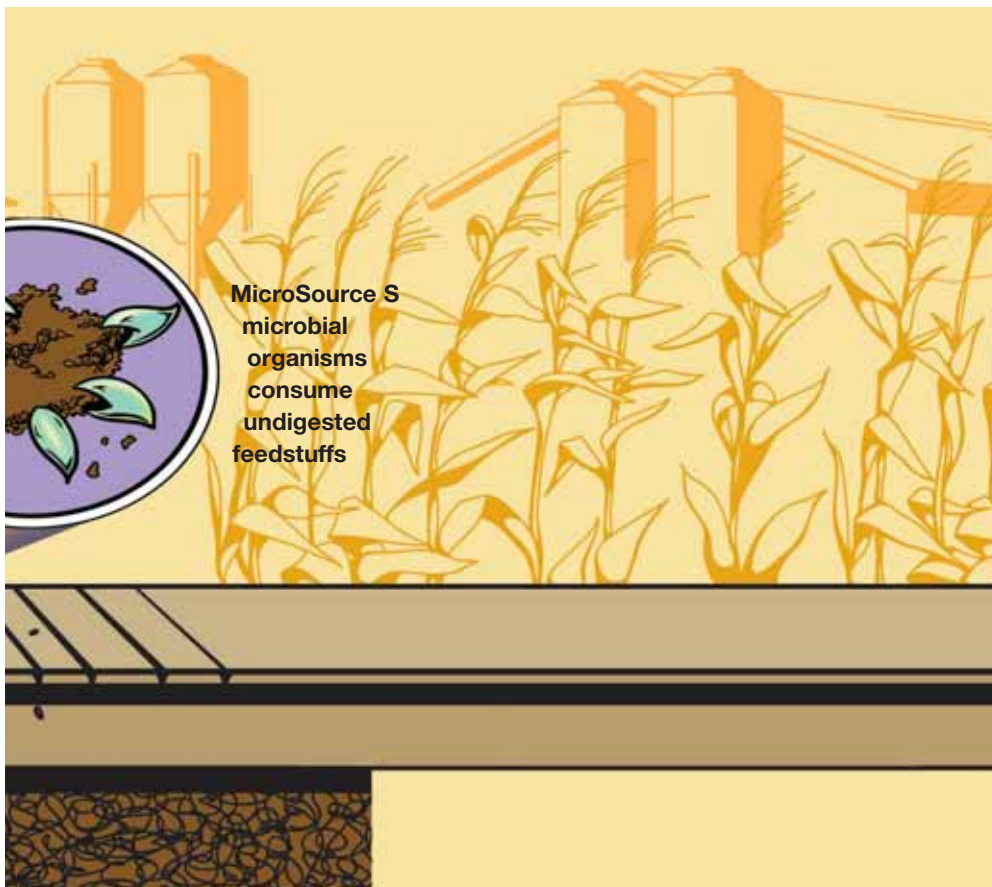
IMPROVED FERTILIZER VALUE

- Uniform field application
- Retains more nitrogen so less commercial fertilizer is needed
- Better nitrogen to phosphorous ratio

IMPROVES DIGESTION OF MANURE SOLIDS

- Creates a uniform slurry
- Improves pumpability
- Retains lagoon capacity
- Saves on manure handling and storage costs

OPTIMIZED PERFORMANCE



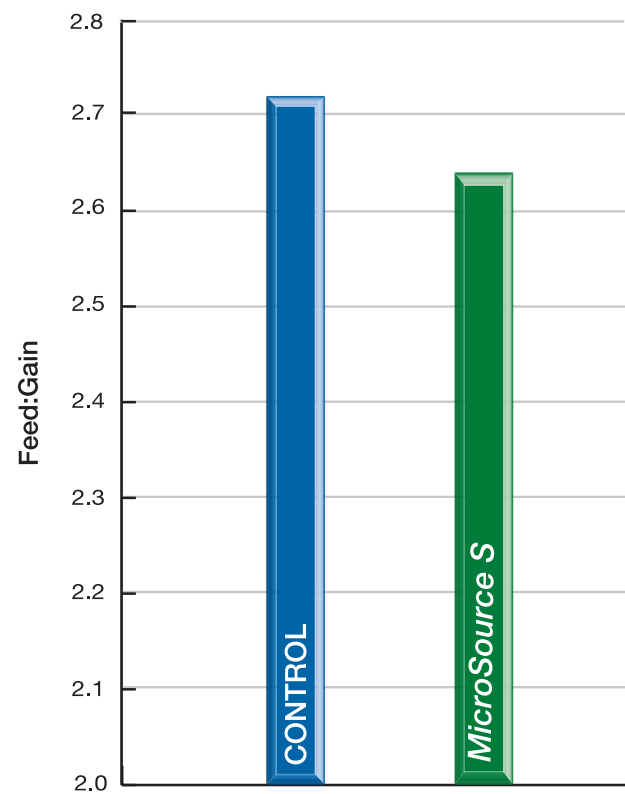


EFFECT ON GROW-FINISH PERFORMANCE

University research and commercial field trials have demonstrated the performance benefits of MicroSource S in finishing swine diets. MicroSource S improved feed conversion by 2.8% ($P \leq 0.03$) (Figure 3) in grow-finish research conducted at the University of Arkansas (Davis et al., 2001). Under commercial conditions Statistical Process Control (SPC) was used to compare performance of MicroSource S to historical company baseline performance for over 700,000 head. When MicroSource S was added to the diets, feed conversion was improved by up to 4.8% and the variation around the mean was reduced, resulting in more uniform performance.

M. E. Davis, D. C. Brown, D. L. Kirkpatrick, and C. V. Maxwell. 2001. Effect of feeding *Bacillus* cultures on performance of growing-finishing swine and on pen cleaning characteristics. *J. Anim. Sci.* 79(Suppl. 2):75 (Abstr.)

Figure 3.
GROW-FINISH PERFORMANCE



MicroSource S improved feed conversion by 2.8%

PRODUCT INFORMATION

MicroSource S contains the viable spores of carefully selected naturally occurring microorganisms. These microorganisms are very stable in feeds and premixes. They are also heat stable and can survive the pelleting process. Available as a base mix (BM) and a manufacturer's concentrate (MC), MicroSource S "BM" is designed to be added to finished feed at the rate of one pound per ton. It is formulated to help ensure a uniform distribution in the finished feed. MicroSource S "MC" is designed for use with premixes and vitamin/trace mineral premixes. To ensure a uniform distribution of active microorganisms, MicroSource S "BM" is the product form of choice for direct addition into finished feeds.



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