

MicroSource® S

Reduces Objectionable Swine Odors

a DSM Product

MicroSource® S is an effective manure management tool which can be used in all stages of swine production. MicroSource® S microorganisms shift the decomposition process of manure to reduce the production of objectionable odors. The primary source of objectionable odors in swine manure are volatile fatty acids (VFA's), volatile sulfides (including hydrogen sulfide), skatoles and indoles. These compounds are the natural by-products of anaerobic decomposition of manure.

How Bad is the Odor?

Measuring odor directly is subjective and variable between individuals. Over the years various odor measurement tools such as the Nasal Ranger® and Scentometer® have been developed to help standardize odor measurements. However there is still considerable variation when using these tools. Research by William (1984) showed that volatile fatty acids could be used as an indicator of objectionable swine odors. Since then many other researchers have used VFA's to gauge odor intensity and have shown them to be an appropriate measurement for evaluating swine manure odor reduction tools.



MicroSource® S consistently reduces VFA's in all types of swine facilities. Research has shown that MicroSource® S can reduce VFA's from 40% to 87% under a variety of different conditions and levels of VFA's.

MicroSource® S Deep Pit Study

MATERIALS AND METHODS. Two identical swine finishing sites were selected. Each site had a single 40' x 300' finishing barn with concrete slated floors and an 8 foot deep concrete pit for manure storage. Both barns were stocked with approximately 1500 hogs. The same feed formulation was used in both barns with MicroSource® S being added to the feed of the treated barn. A 3/4 inch collection tube was used to take core samples from six locations in each barn. These samples were frozen and shipped on dry ice to Iowa State University for analysis by gas chromatography. Samples were taken 5, 6 and 7 months after starting the hogs on MicroSource® S.

RESULTS AND DISCUSSIONS. The level of VFA's in the manure increased over time in the control barn from 720 µg/ml to 1223 µg/ml (Table 1.). As can be seen MicroSource® S reduced the VFA's by 5.8% after 5 months and by 43.1% after 7 months. MicroSource® S begins to work right away, however whenever there are preexisting solids and VFA's present it takes time to realize the full benefit.

Table 1.

| Months from start | VFA's µg/ml | | |
|-------------------|-------------|---------|------------|
| | Control | Treated | Difference |
| 5 Months | 720 | 678 | 5.8 % |
| 6 Months | 963 | 903 | 6.2 % |
| 7 Months | 1223 | 697 | 43.1 % |

Unlimited. DSM

MicroSource® S Lagoon Study

MATERIALS AND METHODS. Two complexes with primary and secondary lagoons were selected. The first complex included a nursery and finishing barn and had a 16.5 million gallon primary lagoon and a 10 million gallon secondary lagoon. The second complex included a breeding gestation and farrowing facilities with 2500 sows. This site contained a 11.9 million gallon primary lagoon and an 8.3 million gallon secondary lagoon. Baseline samples were taken in January and then MicroSource® S was added to the feed at both complexes. The lagoon samples were taken using a 20 foot long 1 inch PVC tube to obtain core samples. Additional samples were taken after 4 and 8 months. A total of three samples were taken per lagoon each sampling period. These samples were frozen and shipped on dry ice to Iowa State University for analysis by gas chromatography.

RESULTS AND DISCUSSIONS. After 4 months the total VFA's were reduced by 87% and 89% in the lagoons (Table 2.). After 8 months the total VFA's were below the 10 µg/ml detection limit of the gas chromatograph.

Table 2.

| Months from start | VFA's µg/ml | | |
|-------------------|-------------|---------|------------|
| | Initial | Month 4 | Difference |
| Complex 1 | 967 | 124 | 87 % |
| Complex 2 | 243 | 27 | 89 % |

MicroSource® S Nursery Study

MATERIAL AND METHODS. The level of VFA's were measured over time in a swine nursery. The nursery facility consisted of a single 46' x 127' building consisting of two rooms with forty pens in each room. The manure from each room was collected in a 20



inch deep pit with a pull plug that was gravity drained to an outside storage unit. A ¾ inch collection tube was used to take core samples from three locations in each room of the barn. These samples were frozen and shipped on ice to Agtech for analysis by HPLC. Baseline samples were taken with the group of pigs in the nursery. MicroSource® S was added to the feed of the next four turns of pigs through the nursery and samples were taken for each turn.

RESULTS AND DISCUSSIONS. The high baseline VFA's level of 13,500 µg/ml (Table 3.) is due to several factors. The lower ventilation rates, higher temperatures and diets used in nurseries tend to increase VFA's. The addition of MicroSource® S to feed resulted in a slight reduction in VFA's for the first turn of pigs with the VFA's decreasing more with subsequent turns. When this trial started there was a build up of solids in the pits which took several turns for MicroSource® S to digest. By the 4th turn the majority of the preexisting solids were digested and a 76% reduction in VFA's was seen.

Table 3.

| VFA's µg/ml | | | | |
|-------------|----------------------|----------------------|----------------------|----------------------|
| Baseline | 1 st Turn | 2 nd Turn | 3 rd Turn | 4 th Turn |
| 13,500 | 13,100 | 10,183 | 5,590 | 3,175 |

CONCLUSIONS. MicroSource® S is an effective manure management tool for reducing offensive odors in deep pit houses, shallow pit houses and lagoons. MicroSource® S works even when there are high levels of VFA's present due to preexisting solids buildup.

MicroSource® S the right thing to do for better community relationships.

MicroSource® S the right thing to do for you, your employees, your pigs, your neighbors and the environment.

MicroSource® S

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