

Reduced Odors, Decreased Mortality & Higher Value Fertilizer Increases Profits with Manure Master Plus™

Location:

- Swartz Family Farm, Pennsylvania, a finisher operating a 2,180 head finishing hog barn with a total deep pit volume of 800,000 gallons.

Objective:

- As with most swine farms, odors and associated fly populations, caused problems for animals and workers alike. Manure crusting and sludge build-up also interfered with efficient pumping and land application. But the major problem for the farm was the bothersome fly population.

Manure Master Technology Used:

- Manure Master Plus™

Results:

- Not only did they achieve almost complete fly reduction in his barns, they noted additional benefits. The most significant benefit was the reduction in mortality rate from an average of 4 to 5 percent to 3 percent during initial product introduction. Mortality is currently averaging 2 percent, a significant achievement and substantial cost savings.
- While the farm operator was looking for a solution to reduce his fly population, he developed a wide range of benefits that improve the profitability of his operation:
 - Resolved surface solids crusting problem
 - Significantly lowered odors
 - Reduced fly populations in and around the barn resulting from decreased odor
 - Reduced mortality rate from 4 to 5 percent to a current 2 percent
 - Reduced odor generated on land application of manure
 - Provided higher value manure fertilizer that is more homogeneous and easier to spread.

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REDUCED SOLIDS & ODOR CONTROL IMPROVES SWINE HEALTH & FARM PROFITS

Location: Pfleegor Farm, Lewisburg, Pennsylvania

Background: Pfleegor Farm is a contract grower for Country View Family Farms (CVFF), one of the largest swine farm co-ops in the United States. Gary Pfleegor operates a compact 15 acre, two-barn facility on a land tract that includes his personal home. The barns are cleaned and the surfaces sanitized following each “grow cycle” to minimize potential problems within each production colony.

Objective: The farm sought technology that would improve operations by developing more efficient manure removal, reduce bottom solids and odors as well as the associated fly problem. Pfleegor was convinced that the heavy fly population was a contributing factor in the health of his animals.

With the close proximity of his personal home to the two barns, odor and fly population control would also improve his own living conditions.

Manure transfer was a laborious process with the build-up of large quantities of heavy bottom solids. Agitation was required prior to removal and residual sludge solids often interfered with the pumping process.

Working closely with his contract pumper, a trial was run with Manure Master Plus™ technology. In the spring of 2000, after the 350,000 gallon waste pit was pumped, six gallons were applied to the pit. Thereafter, one gallon was added each week for four weeks, followed by one gallon per month until the pit was pumped again.

Results: During the first year’s trial, a reduction in odor and fly populations in the treated barn was almost immediately evident. At waste removal time, the pit’s bottom and sides were found to be extremely clean. The two feet of solids, which had usually remained after waste removal in the past, was absent.

Encouraged by initial results, both barns were converted in 2002. Reports indicate that herd health significantly improved and mortality rates dropped from five percent to two percent. Reduced odor and fewer flies in the barns and surrounding areas were also observed.

Pfleegor remains convinced that fly reduction is the key to his herd’s improved health. When fly populations appear to increase, an additional gallon is applied to each pit and odors and associated fly populations generally decrease within 12 hours.

He and his family can now leave their windows open on any day or evening, even during the hottest weather—something they could never do previously.

While **Manure Master Plus™** technology does not claim to control flies, it does help control odors and solids build-up that often attract and harbor insects.



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ODOR CONTROL, REDUCED SOLIDS, LOWER MORTALITY & INCREASED CROP YIELDS WITH MANURE MASTER PLUS™ ADD UP TO INCREASED PROFITS

Location: Hatfield's Country View Family Farms, Pennsylvania

Background: Hatfield Farm is a producer for Country View Family Farms (CVFF), a subsidiary of Hatfield Quality Meats Company of Pennsylvania. CVFF is one of the largest swine co-ops in the United States with over 200 grow farms and 50 sow facilities. They work closely with their growers to continuously improve efficiency.

Objective: Raising swine is a challenging business. Environmental and public health issues impact farm operators worldwide. The increasing demand for production, market pressures for price control and economic demands have led to the consolidation of larger and larger facilities. Since facility size parallels swine numbers, increased waste concentrations are the end result. Manure management is a critical component for industrialized farms as the EPA enforces strict protocols for odor control in increasingly populated areas, the prevention of water pollution and the disposal of waste solids to prevent damaging nutrient run-off.

Hatfield's Country View Family Farms decided to test new technology at several farms to determine if it could help improve manure management operations.

Results: The tests consistently showed numerous improvements including:

- A reduction in noxious gases (leads to improved animal health and decreased mortality rates)
- Odor control (provides safer working conditions and reduces employee complaints)
- Less sludge build-up (reduces pumping problems and lowers the need to agitate manure)
- A decrease in fly populations as a result of reduced odors and solids that attract, feed and harbor them
- Increased crop yields

An unexpected benefit was the significantly increased crop yields that resulted from the application of the higher value manure, used from these facilities, in the soil.

CVFF repeated the trials on different farms with the same beneficial results. To date, the same program has been incorporated into the operation of over 80 farms in Western Pennsylvania with plans to expand to other facilities.

Manure Master Plus™ technology is an environmentally safe and economical solution to meet the ever increasing challenges of manure management. It helps swine farmers maintain the highest level of integrity in animal welfare and biosecurity, as well as produce safe and wholesome products their consumers can trust.



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Swine Lagoon Treatment with Manure Master Plus™ & Pit Accelerator™

Objective:

- Improve BOD, COD, odors and liquefaction of lagoon manure

Inoculation Date:

- May 3, 2017

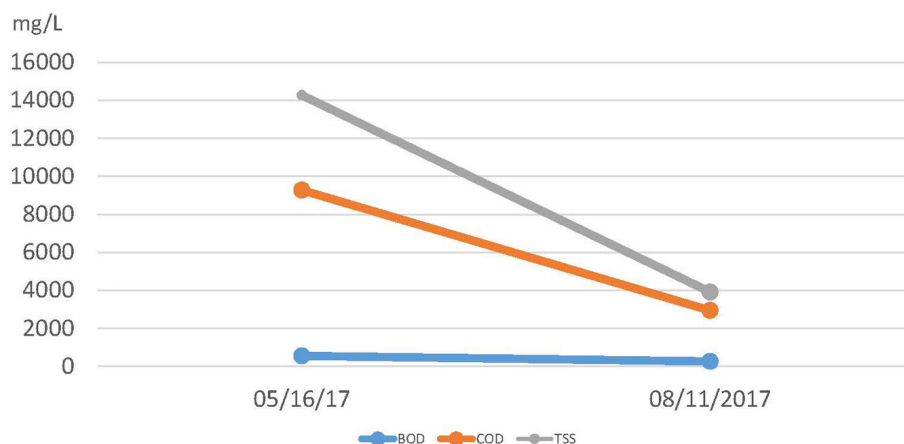
Digester Volume:

- 792,516 U.S. Gallons (liquid)

Manure Master Technology Used:

- Applied at lagoon inlet
- Manure Master Plus™
- Pit Accelerator™

Lab Analysis Summary:



Effluent Parameter	Unit	May 16, 2017	August 11, 2017	% Reduction
BOD	mg/L	546	256	53%
COD	mg/L	8725	2680	69.30%
TSS	mg/L	5000	970	80.60%

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Healthier Swine, Easier Manure Handling & Increased Crop Yields Improves Profits with Manure Master Plus™

Location and Background:

- The Brubaker Farm, contract grower and farmer, the facility includes a number of deep 500,000 gallon manure pits; the farm operation also grows 5 to 600 acres of corn for feed or sale.

Objective:

- The swine operation experienced a build-up of hydrogen sulfide and ammonia gases toxic to both animals and workers. Flies were another nuisance as well as a potential for transmitting disease. The farmer was also concerned about odor generation when he land applied manure.

Manure Master Technology Used:

- Manure Master Plus™

Results:

- The treatment completely eliminated problems with the surface and bottom solids in his deep manure pits, removed almost the entire odor in the barns and significantly reduced odors when applying the treated manure to his farm land.
- The farm manager noted a decrease in fly population in his barns and improved health of his swine.
- However, these were not the only benefits noted, namely in crop yields. The grower operation realized that he had increased corn production from 120 bushels per acre to 180 bushels per acre, a 50 percent increase in yield.
- Tracked nitrogen content of the soil and found that our product helped stabilize nitrogen for a much longer period in the crop cycle.

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Hog Farm Improves Work Conditions & Wastewater Treatment with Manure Master Plus™

Location:

- Swine Farm, Southeast Georgia. This twenty-year old farm consisted of several barns each of which was equipped with two 242 gallon rinse tanks that were used to flush the pit area under the barns twice daily. The manure pits discharged to a 5.5 million gallon lagoon.

Objective:

- The lagoon was not meeting the discharge permit levels. Examination determined that there was no presence of biological activity in the lagoon and the solids build-up on the lagoon surface was at a critical level. H₂S odor was so severe that plant employees were often unable to perform their duties because of respiratory problems and eye irritation.

Manure Master Technology Used:

- Manure Master Plus™

Results:

- The waste lagoon was treated with a single application of 45 ppm (250 gallons) of Manure Master Plus resulting in immediate reduction of offensive odor emanating for the lagoon. Within 14 days, the lagoon showed signs of increased biological activity along with a substantial reduction in surface solids. Twenty-one days after treatment, the lagoon was extremely active with biological activity. The water and surface solids were virtually eliminated.
- The barns were also treated and added to the to the 242 gallon rinse tank in each barn at a rate one quart per tank. Each barn contained 2 tanks that were used to flush the pit area under the barns twice daily. The hydrogen sulfide reduction was immediate. Covers were removed from the junction boxes and no offensive odors were detectable.
- Manure Master Plus was also used in the cleaning process of the farrowing barn. The product was applied with the use of a chemical input line on a pressure washer at a rate of 6 ounces per gallon. The entire interior of the barn was washed with the product. The results were outstanding. The only odor apparent in the farrowing barn following the treatment came from the feed in the barn.
- The treatment program continued for a test period of two months. The plant employees reported remarkable reductions in the side effects of hydrogen sulfide as levels were substantially reduced.
- The treatment protocol was considered a success. It solved the TSS and BOD problems in the waste lagoon after a single treatment. The lagoon was functioning effectively just 21 days following treatment. Hydrogen sulfide odors, and associated toxicity, were greatly reduced by using Manure Master Plus in the pit rinse system and cleaning systems in the barns.

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